<110> Morsey, Mohamad

<120> GROWTH HORMONE AND GROWTH HORMONE RELEASING HORMONE
COMPOSITIONS

<130> PC10525B

<140>
<141>

<160> 67

<170> PatentIn Ver. 2.1

<210> 1
<211> 246
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 1
```
ggatccgcca ccatgccact ctgggtgttc ttctttgtga tcctcaccct cagcaacagc 60
tcccactgct ccccacctcc ccctttgacc ctcaggatgc ggcggtatgc agatgccatc 120
ttcaccaaca gctaccggaa ggtgctgggc cagctgtccg cccgcaagct gctccaggac 180
atcatgagca ggcagcaggg agagagaaac caagagcaag gagcaagggt gcggctttga 240
agatct                                                             246
```

<210> 2
<211> 75
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: GHRH protein

<400> 2
```
Met Pro Leu Trp Val Phe Phe Phe Val Ile Leu Thr Leu Ser Asn Ser
 1               5                  10                  15

Ser His Cys Ser Pro Pro Pro Pro Leu Thr Leu Arg Met Arg Arg Tyr
            20                  25                  30
```

```
Ala Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Gly Gln Leu
        35                  40                  45


Ser Ala Arg Lys Leu Leu Gln Asp Ile Met Ser Arg Gln Gln Gly Glu
     50                  55                  60


Arg Asn Gln Glu Gln Gly Ala Arg Val Arg Leu
65                  70                  75



<210> 3
<211> 685
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
      obligonucleotide

<400> 3
ggtaccatcg ctgggggagct gggggagggg tcgccttcct gccctaccca ggactccggg 60
tgcgaccgct cctctatctc tccagcccac caccactcca ccacttggac acgtctccct 120
cctccctgga gtcgctctag agggtttggg ggtctgagta aagaacccga agtagggata 180
cagtgtggcg gcaccttcca gaggccccgg gcgcagggta gaccggggcg gggcggcccg 240
cggacaggtg cagccccagg cgcaggcgca ctcgcgcctc ccggcgcagg cggtgaacct 300
cgccccaccc cagcccctcc gggggggcagc tgggccgggt cgggagggggc ccaccagccc 360
gggagacact ccatatacgg ccaggcccgc tttacctggg ctccggccag gccgctcctt 420
ctttggtcag cacaggggac ccgggcgggg gcccaggccg ctaacccgcc ggggggagggg 480
gctccagtgc ccaacaccca aatatggctc gagaaggggga gcgacattcc agtgaggcgg 540
ctcgggggga aacccgcgg gctatataaa acctgagcgt ggggaccagc ggccaccgca 600
gcggacagcg ccgagagaag cctcgcttcc ctcccgcggc gaccagggcc ccagccggag 660
agcagcaggt gtagccacca agctt                                       685



<210> 4
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:  primer

<400> 4
aatcccaagc ttgccaccat gccactctgg                                    30



<210> 5 .
<211> 30
```

2

```
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:   Primer

<400> 5
tattgctcta gatcaaagcc gcacccttgc                                    30


<210> 6
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:   Primer

<400> 6
cgggtaccat cgctggggga gctggggcag gggtcgcct                           39


<210> 7
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:   Primer

<400> 7
cccgcttggt ggctacacct gctgctctcc ggctggggcc                          40


<210> 8
<211> 2014
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:  SK 2014

<400> 8
ggtaccgcta taggagagaa aagagctgca ctgagcaccc tccttcccct ttaaatgtca 60
acagattagg agtcagtgaa tgacagcaca cctcttgcta ccttagagac caaaatttaa 120
gctactcccc ttaagctata gctagagtgc acctgccagt gtctttagtc cccactgatg 180
gaacaggacc caaggtattg aagatggaac atagttattc attcatcctc taatttaaaa 240
agctggatat gctgtacagc agaaattgac ggaacaatgt aaatcaacta taacagaaga 300
```

3

```
aataaaaacc tggggggaaa gaagctgact atgaaacccc aggagctttc tacatgggcc 360
tggactcacc aaactcttta ttttgtaatg gacttctgac atttttagga agggctgtcc 420
tgatgtgggc tatagaagag ggtttcacat gcttcttcaa gaggacccac actgtcccag 480
ttgctgagtc ccaccaccag atgctagtgg cagctatttg gggaacactt aggcactaca 540
aaaaaatgag tgattccatt ctggctcaca ccatatccct gatgtacccc ttaaagcatg 600
tcactgagtt catcacagaa aattgtttcc cctgtgcctt ccacaacaag gttagagctg 660
tccttggggc caggggaagg gggcagggag tgagaagcac caactggata acctcctctg 720
accccactc caccttacca taagtagatc caaatccttc tagaaaatta ggaaggcata 780
tccccatata tcagcgatat aaatagaact gcttcagcgc tctggtagac ggtgactctc 840
caaggtggac tgggaggcag cctggccttg gctgggcatc gtcctctaaa tagaaagatg 900
aacttgttca gcctttccag aaggaaaact gctgcccagc ctacagtgca acgtccttgt 960
cttccatctg gaggaagcac gggtgacata tcatctagta agggcacctc tctgtttcca 1020
cctccaggtc gagggggtgtg acccttactt ctcagcctca agggagggac actcaacycc 1080
ccaaaaagac atgagggcgc tcagctcggc ccaccgcacc ccggaccgga gccgtcaccc 1140
cccgaaattc actcccttca caagccccca agcgcgttct ctggtgcgga ctgctccggg 1200
gccctggctt tgtgcccagc gttgtcagag ccaccgccct gagcctgtcc ccgggagccc 1260
cgcgcctcct cccaccgctc crctctcgcg ccccgcggcc agttgtctgc cccgagacag 1320
ctgcgcgccc tcccgctgcc ggtggccctc tccggtgggg gtggggaccg acagggtcag 1380
ccctccggat ccggggcgct ccgggtagcg gggagaagtg atcgctgggg agctggggga 1440
ggggtcgcct tcctgcccta cccaggactc cgggtgcgac cgctcctcta tctctccagc 1500
ccaccaccac tccaccactt ggacacgtct ccctcctccc tggagtcgct ctagagggtt 1560
tgggggtctg agtaaagaac ccgaagtagg gatacagtgt ggcggcacct tccagaggcc 1620
ccgggcgcag ggtagaccgg ggcggggcgg cccgcggaca ggtgcagccc caggcgcagg 1680
cgcactcgcg cctcccggcg caggcggtga acctcgcccc accccagccc ctccgggggg 1740
cagctgggcc gggtcgggag gggcccacca gcccgggaga cactccatat acggccaggc 1800
ccgctttacc tgggctccgg ccaggccgct ccttctttgg tcagcacagg ggacccgggc 1860
gggggcccag gccgctaacc cgccggggga ggggctcca gtgcccaaca cccaaatatg 1920
gctcgagaag gggagcgaca ttccagtgag gcggctcggg gggagaaccc gcgggctata 1980
taaaacctga gcgtggggac cagcggccaa gctt                               2014
```

```
<210> 9
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:    Primer

<400> 9
cccaagcttg gccgctggtc cccacgctca                                          30


<210> 10
<211> 38
<212> DNA
<213> Artificial Sequence
```

<220>
<223> Description of Artificial Sequence: Primer

<400> 10
caggtaccgc tataggagac aaaagagtgc actgagca   38

<210> 11
<211> 46
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 11
agatatcccg gccgctctag accaggcccc tggatccgcc accatg   46

<210> 12
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 12
gaagatctct acctgctcat gatgtcctgg agcagcttgc gggc   44

<210> 13
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 13
gtcattccga gattcggata   20

<210> 14
<211> 40
<212> DNA
<213> Artificial Sequence

5

<220>
<223> Description of Artificial Sequence: Primer

<400> 14
gtcattccga gattcggata cacaggatcc gccaccatcc   40

<210> 15
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 15
cactctgggt gttcttcttt gtgatcctca ccctcagcaa   40

<210> 16
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 16
cagctcccac tgctccccac ctcccccttt gaccctcagg   40

<210> 17
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 17
atgcggcggt attatgcaga tgccatcttc accaacagct   40

<210> 18
<211> 40
<212> DNA
<213> Artificial Sequence

6

<220>
<223> Description of Artificial Sequence: Primer

<400> 18
accggaaggt gctgggccag ctgtccgccc gcaagctcct   40

<210> 19
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 19
ccaggacatc atgagcaggt agagatctga taagcgttat   40

<210> 20
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 20
ataacgctta tcagatctct   20

<210> 21
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 21
acctgctcat gatgtcctgg accagcttgc gggcggacag   40

<210> 22
<211> 40
<212> DNA
<213> Artificial Sequence

7

<220>
<223> Description of Artificial Sequence: Primer

<400> 26
gagctcaagc ttgccaccat gccactctgg   30

<210> 27
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 27
aagatctaga ctacctgctc atgatgtc   28

<210> 28
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 28
gagctcaagc ttgccaccat gccactctgg   30

<210> 29
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 29
aagatctaga ctacctgctc atgatgtc   28

<210> 30
<211> 20
<212> DNA
<213> Artificial Sequence

9

<220>
<223> Description of Artificial Sequence: Primer

<400> 30
gtcattccga gattcggata   20

<210> 31
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 31
gtcattccga gattcggata cacaggatcc gccaccatcc   40

<210> 32
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 32
cactctgggt gttcttcttt gtgatcctca ccctcagcaa   40

<210> 33
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 33
cagctccact gctccccacc tccccctttg accctcagg   39

<210> 34
<211> 40
<212> DNA
<213> Artificial Sequence

10

<220>
<223> Description of Artificial Sequence: Primer

<400> 34
atgcggcggt attatgcaga tcccatcttc accaacagct   40

<210> 35
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 35
accggaaggt gctggcccag ctgtccgccc gcaaggccct   40

<210> 36
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 36
ccaggacatc atgagcaggt agagatctga taagcgttat   40

<210> 37
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 37
ataacgctta tcagatctct   20

<210> 38
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 38
acctgctcat gatgtcctgg agggccttgc gggcccacag   40

<210> 39
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 39
ctgggccagc accttccggt acctgttggt gaagatggca   40

<210> 40
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 40
tctccataat accgccgcat cctgagggtc aaagggggag   40

<210> 41
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 41
gtggggagca gtgggagctg ttgctgaggg tgaggatcac   40

<210> 42
<211> 40
<212> DNA
<213> Artificial Sequence

12

<220>
<223> Description of Artificial Sequence: Primer

<400> 42
gtggggagca gtgggagctc ttgctgaggg tgaggatcac   40

<210> 43
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 43
ctagaaggca cagctgcttt ccacg   25

<210> 44
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 44
atggctgcag gcccccggac ctctg   25

<210> 45
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 45
aaagatatca tggctgcagg cccccgg   27

<210> 46
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 46
aaaagatctc tagaaggcac agctgct   27

<210> 47
<211> 5185
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: pGHRH-4
      construct

<400> 47
gctgtgcctt ctagttgcca gccatctgtt gtttgcccct ccccgtgcc ttccttgacc 60
ctggaaggtg ccactcccac tgtcctttcc taataaaatg aggaaattgc atcgcattgt 120
ctgagtaggt gtcattctat tctgggggt ggggtggggc aggacagcaa gggggaggat 180
tgggaagaca atagcaggca tgctggggat gcggtgggct ctatgggtac ccaggtgctg 240
aagaattgac ccggttcctc ctgggccaga aagaagcagg cacatcccct tctctgtgac 300
acaccctgtc cacgcccctg gttcttagtt ccagccccac tcataggaca ctcatagctc 360
aggagggctc cgccttcaat cccacccgct aaagtacttg gagcggtctc tccctccctc 420
atcagcccac caaaccaaac ctagcctcca agagtgggaa gaaattaaag caagataggc 480
tattaagtgc agagggagag aaaatgcctc caacatgtga ggaagtaatg agagaaatca 540
tagaatttct tccgcttcct cgctcactga ctcgctgcgc tcggtcgttc ggctgcggcg 600
agcggtatca gctcactcaa aggcggtaat acggttatcc acagaatcag gggataacgc 660
aggaaagaac atgtgagcaa aaggccagca aaaggccagg aaccgtaaaa aggccgcgtt 720
gctggcgttt ttccataggc tccgcccccc tgacgagcat cacaaaaatc gacgctcaag 780
tcagaggtgg cgaaacccga caggactata aagataccag gcgtttcccc ctggaagctc 840
cctcgtgcgc tctcctgttc cgaccctgcc gcttaccgga tacctgtccg cctttctccc 900
ttcgggaagc gtggcgcttt ctcatagctc acgctgtagg tatctcagtt cggtgtaggt 960
cgttcgctcc aagctgggct gtgtgcacga accccccgtt cagcccgacc gctgcgcctt 1020
atccggtaac tatcgtcttg agtccaaccc ggtaagacac gacttatcgc cactggcagc 1080
agccactggt aacaggatta gcagagcgag gtatgtaggc ggtgctacag agttcttgaa 1140
gtggtggcct aactacggct acactagaag aacagtattt ggtatctgcg ctctgctgaa 1200
gccagttacc ttcggaaaaa gagttggtag ctcttgatcc ggcaaacaaa ccaccgctgg 1260
tagcggtggt ttttttgttt gcaagcagca gattacgcgc agaaaaaaag gatctcaaga 1320
agatcctttg atctttctta cggggtctga cgctcagtgg aacgaaaact cacgttaagg 1380
gattttggtc atgagattat caaaaaggat cttcacctag atccttttaa attaaaaatg 1440
aagtttaaa tcaatctaaa gtatatatga gtaaacttgg tctgacagtt accaatgctt 1500
aatcagtgag gcacctatct cagcgatctg tctatttcgt tcatccatag ttgcctgact 1560
cgggggggg gggcgctgag gtctgcctcg tgaagaaggt gttgctgact cataccaggc 1620
ctgaatcgcc ccatcatcca gccagaaagt gagggagcca cggttgatga gagctttgtt 1680
gtaggtggac cagttggtga ttttgaactt ttgctttgcc acggaacggt ctgcgttgtc 1740
gggaagatgc gtgatctgat ccttcaactc agcaaagtt cgatttattc aacaaagccg 1800
ccgtcccgtc aagtcagcgt aatgctctgc cagtgttaca accaattaac caattctgat 1860

14

```
tagaaaaact catcgagcat caaatgaaac tgcaatttat tcatatcagg attatcaata 1920
ccatattttt gaaaaagccg tttctgtaat gaaggagaaa actcaccgag gcagttccat 1980
aggatggcaa gatcctggta tcggtctgcg attccgactc gtccaacatc aatacaacct 2040
attaatttcc cctcgtcaaa aataaggtta tcaagtgaga aatcaccatg agtgacgact 2100
gaatccggtg agaatggcaa aagcttatgc atttctttcc agacttgttc aacaggccag 2160
ccattacgct cgtcatcaaa atcactcgca tcaaccaaac cgttattcat tcgtgattgc 2220
gcctgagcga gacgaaatac gcgatcgctg ttaaaaggac aattacaaac aggaatcgaa 2280
tgcaaccggc gcaggaacac tgccagcgca tcaacaatat tttcacctga atcaggatat 2340
tcttctaata cctggaatgc tgttttcccg gggatcgcag tggtgagtaa ccatgcatca 2400
tcaggagtac ggataaaatg cttgatggtc ggaagaggca taaattccgt cagccagttt 2460
agtctgacca tctcatctgt aacatcattg gcaacgctac ctttgccatg tttcagaaac 2520
aactctggcg catcgggctt cccatacaat cgatagattg tcgcacctga ttgcccgaca 2580
ttatcgcgag cccatttata cccatataaa tcagcatcca tgttggaatt taatcgcggc 2640
ctcgagcaag acgtttcccg ttgaatatgg ctcataacac cccttgtatt actgtttatg 2700
taagcagaca gttttattgt tcatgatgat atattttat cttgtgcaat gtaacatcag 2760
agattttgag acacaacgtg ctttcccccc cccccccatt attgaagcat ttatcaggt 2820
tattgtctca tgagcggata catatttgaa tgtatttaga aaaataaaca aatagggtt 2880
ccgcgcacat ttccccgaaa agtgccacct gacgtctaag aaaccattat tatcatgaca 2940
ttaacctata aaaataggcg tatcacgagg ccctttcgtc ctcgcgcgtt tcggtgatga 3000
cggtgaaaac ctctgacaca tgcagctccc ggagacggtc acagcttgtc tgtaagcgga 3060
tgccgggagc agacaagccc gtcagggcgc gtcagcgggt gttggcgggt gtcggggctg 3120
gcttaactat gcggcatcag agcagattgt actgagagtg caccatatgc ggtgtgaaat 3180
accgcacaga tgcgtaagga gaaaataccg catcagattg gctattggcc attgcatacg 3240
ttgtatccat atcataatat gtacatttat attggctcat gtccaacatt accgccatgt 3300
tgacattgat tattgactag ttattaatag taatcaatta cggggtcatt agttcatagc 3360
ccatatatgg agttccgcgt tacataactt acggtaaatg ccccgcctgg ctgaccgccc 3420
aacgacccccc gcccattgac gtcaataatg acgtatgttc ccatagtaac gccaataggg 3480
actttccatt gacgtcaatg ggtggagtat ttacggtaaa ctgcccactt ggcagtacat 3540
caagtgtatc atatgccaag tacgccccct attgacgtca atgacggtaa atggcccgcc 3600
tggcattatg cccagtacat gaccttatgg gactttccta cttggcagta catctacgta 3660
ttagtcatcg ctattaccat ggtgatgcgg ttttggcagt acatcaatgg gcgtggatag 3720
cggtttgact cacggggatt tccaagtctc caccccattg acgtcaatgg gagtttgttt 3780
tggcaccaaa atcaacggga ctttccaaaa tgtcgtaaca actccgcccc attgacgcaa 3840
atgggcggta ggcgtgtacg gtgggaggtc tatataagca gagctcgttt agtgaaccgt 3900
cagatcgcct ggagacgcca tccacgctgt tttgacctcc atagaagaca ccgggaccga 3960
tccagcctcc gcggccggga acggtgcatt ggaacgcgga ttccccgtgc caagagtgac 4020
gtaagtaccg cctatagact ctataggcac accccctttgg ctcttatgca tgctatactg 4080
tttttggctt ggggcctata cacccccgct tccttatgct ataggtgatg gtatagctta 4140
gcctataggt gtgggttatt gaccattatt gaccactccc ctattggtga cgatactttc 4200
cattactaat ccataacatg gctctttgcc acaactatct ctattggcta tatgccaata 4260
ctctgtcctt cagagactga cacggactct gtattttac aggatggggt cccatttatt 4320
atttacaaat tcacatatac aacaacgccg tcccccgtgc ccgcagtttt tattaaacat 4380
agcgtgggat ctccacgcga atctcgggta cgtgttccgg acatgggctc ttctccggta 4440
gcggcggagc ttccacatcc gagccctggt cccatgcctc cagcggctca tggtcgctcg 4500
gcagctcctt gctcctaaca gtggaggcca gacttaggca cagcacaatg cccaccacca 4560
ccagtgtgcc gcacaaggcc gtggcggtag ggtatgtgtc tgaaaatgag cgtggagatt 4620
gggctcgcac ggctgacgca gatggaagac ttaaggcagc ggcagaagaa gatgcaggca 4680
gctgagttgt tgtattctga taagagtcag aggtaactcc cgttgcggtg ctgttaacgg 4740
```

15

```
gttcatccat agttgcctga ctccccgtcg tgtagataac tacgatacgg gagggcttac 1740
catctggccc cagtgctgca atgataccgc gagacccacg ctcaccggct ccagatttat 1800
cagcaataaa ccagccagcc ggaagggccg agcgcagaag tggtcctgca actttatccg 1860
cctccatcca gtctattaat tgttgccggg aagctagagt aagtagttcg ccagttaata 1920
gtttgcgcaa cgttgttgcc attgctacag gcatcgtggt gtcacgctcg tcgtttggta 1980
tggcttcatt cagctccggt tcccaacgat caaggcgagt tacatgatcc cccatgttgt 2040
gcaaaaaagc ggttagctcc ttcggtcctc cgatcgttgt cagaagtaag ttggccgcag 2100
tgttatcact catggttatg gcagcactgc ataattctct tactgtcatg ccatccgtaa 2160
gatgcttttc tgtgactggt gagtactcaa ccaagtcatt ctgagaatag tgtatgcggc 2220
gaccgagttg ctcttgcccg gcgtcaatac gggataatac cgcgccacat agcagaactt 2280
taaaagtgct catcattgga aaacgttctt cggggcgaaa actctcaagg atcttaccgc 2340
tgttgagatc cagttcgatg taacccactc gtgcacccaa ctgatcttca gcatctttta 2400
ctttcaccag cgtttctggg tgagcaaaaa caggaaggca aaatgccgca aaaaagggaa 2460
taagggcgac acggaaatgt tgaatactca tactcttcct ttttcaatat tattgaagca 2520
tttatcaggg ttattgtctc atgagcggat acatatttga atgtatttag aaaaataaac 2580
aaataggggt tccgcgcaca tttccccgaa aagtgccacc tgacgcgccc tgtagcggcg 2640
cattaagcgc ggcgggtgtg gtggttacgc gcagcgtgac cgctacactt gccagcgccc 2700
tagcgcccgc tcctttcgct ttcttccctt cctttctcgc cacgttcgcc ggctttcccc 2760
gtcaagctct aaatcggggg ctccctttag ggttccgatt tagtgcttta cggcacctcg 2820
accccaaaaa acttgattag ggtgatggtt cacgtagtgg gccatcgccc tgatagacgg 2880
tttttcgccc tttgacgttg gagtccacgt tctttaatag tggactcttg ttccaaactg 2940
gaacaacact caaccctatc tcggtctatt cttttgattt ataagggatt ttgccgattt 3000
cggcctattg gttaaaaaat gagctgattt aacaaaaatt aacgcgaat tttaacaaaa 3060
tattaacgtt tacaatttcc cattcgccat tcaggctgcg caactgttgg gaagggcgat 3120
cggtgcgggc ctcttcgcta ttacgccagc ccaagctacc atgataagta agtaatatta 3180
aggtacggga ggtacttgga gcggccgcaa taaaatatct ttattttcat tacatctgtg 3240
tgttggtttt ttgtgtgaat cgatagtact aacatacgct ctccatcaaa acaaaacgaa 3300
acaaaacaaa ctagcaaaat aggctgtccc cagtgcaagt gcaggtgcca gaacatttct 3360
ctatcgata                                                        3369


<210> 49
<211> 3976
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
      pGHRH1-44WTSK685 construct

<400> 49
ggtaccatcg ctggggagct gggggagggg tcgccttcct gccctaccca ggactccggg 60
tgcgaccgct cctctatctc tccagcccac caccactcca ccacttggac acgtctccct 120
cctccctgga gtcgctctag agggtttggg ggtctgagta aagaacccga agtagggata 180
cagtgtggcg gcaccttcca gaggccccgg gcgcagggta gaccggggcg gggcggcccg 240
cggacaggtg cagccccagg cgcaggcgca ctcgcgcctc ccggcgcagg cggtgaacct 300
cgccccaccc cagcccctcc ggggggcagc tgggccgggt cgggaggggc ccaccagccc 360
gggagacact ccatatacgg ccaggcccgc tttacctggg ctccggccag ccgctccttt 420
```

17

```
ctttggtcag cacaggggac ccgggcgggg gcccaggccg ctaacccgcc gggggagggg 480
gctccagtgc ccaacaccca aatatggctc gagaagggga gcgacattcc agtgaggcgg 540
ctcgggggga gaacccgcgg gctatataaa acctgagcgt ggggaccagc ggccaccgca 600
gcggacagcg ccgagagaag cctcgcttcc ctcccgcggc gaccagggcc ccagccggag 660
agcagcaggt gtagccacca agcttgccac catgccactc tgggtgttct tctttgtgat 720
cctcaccctc agcaacagct cccactgctc cccacctccc cctttgaccc tcaggatgcg 780
gcggtatgca gatgccatct tcaccaacag ctaccggaag gtgctgggcc agctgtccgc 840
ccgcaagctg ctccaggaca tcatgagcag gcagcaggga gagagaaacc aagagcaagg 900
agcaagggtg cggctttgat ctagagtcgg ggcggccggc cgcttcgagc agacatgata 960
agatacattg atgagtttgg acaaaccaca actagaatgc agtgaaaaaa atgctttatt 1020
tgtgaaattt gtgatgctat tgctttattt gtaaccatta taagctgcaa taaacaagtt 1080
aacaacaaca attgcattca ttttatgttt caggttcagg gggaggtgtg ggaggttttt 1140
taaagcaagt aaaacctcta caaatgtggt aaaatcgata aggatccgtc gaccgatgcc 1200
cttgagagcc ttcaacccag tcagctcctt ccggtgggcg cggggcatga ctatcgtcgc 1260
cgcacttatg actgtcttct ttatcatgca actcgtagga caggtgccgg cagcgctctt 1320
ccgcttcctc gctcactgac tcgctgcgct cggtcgttcg ctgcggcga gcggtatcag 1380
ctcactcaaa ggcggtaata cggttatcca cagaatcagg ggataacgca ggaaagaaca 1440
tgtgagcaaa aggccagcaa aaggccagga accgtaaaaa ggccgcgttg ctggcgtttt 1500
tccataggct ccgcccccct gacgagcatc acaaaaatcg acgctcaagt cagaggtggc 1560
gaaacccgac aggactataa agataccagg cgtttccccc tggaagctcc ctcgtgcgct 1620
ctcctgttcc gaccctgccg cttaccggat acctgtccgc ctttctccct tcgggaagcg 1680
tggcgctttc tcaatgctca cgctgtaggt atctcagttc ggtgtaggtc gttcgctcca 1740
agctgggctg tgtgcacgaa ccccccgttc agcccgaccg ctgcgcctta ccggtaact 1800
atcgtcttga gtccaacccg gtaagacacg acttatcgcc actggcagca gccactggta 1860
acaggattag cagagcgagg tatgtaggcg gtgctacaga gttcttgaag tggtggccta 1920
actacggcta cactagaagg acagtatttg gtatctgcgc tctgctgaag ccagttacct 1980
tcggaaaaag agttggtagc tcttgatccg gcaaacaaac caccgctggt agcggtggtt 2040
ttttgtttg caagcagcag attacgcgca gaaaaaaagg atctcaagaa gatcctttga 2100
tcttttctac ggggtctgac gctcagtgga acgaaaactc acgttaaggg attttggtca 2160
tgagattatc aaaaaggatc ttcacctaga tccttttaaa ttaaaaatga agttttaaat 2220
caatctaaag tatatatgag taaacttggt ctgacagtta ccaatgctta atcagtgagg 2280
cacctatctc agcgatctgt ctatttcgtt catccatagt tgcctgactc ccgtcgtgt 2340
agataactac gatacgggag ggcttaccat ctggccccag tgctgcaatg ataccgcgag 2400
acccacgctc accggctcca gatttatcag caataaacca gccagccgga agggccgagc 2460
gcagaagtgg tcctgcaact ttatccgcct ccatccagtc tattaattgt tgccgggaag 2520
ctagagtaag tagttcgcca gttaatagtt tgcgcaacgt tgttgccatt gctacaggca 2580
tcgtggtgtc acgctcgtcg tttggtatgg cttcattcag ctccggttcc aacgatcaa 2640
ggcgagttac atgatccccc atgttgtgca aaaaagcggt tagctccttc ggtcctccga 2700
tcgttgtcag aagtaagttg gccgcagtgt tatcactcat ggttatggca gcactgcata 2760
attctcttac tgtcatgcca tccgtaagat gcttttctgt gactggtgag tactcaacca 2820
agtcattctg agaatagtgt atgcggcgac cgagttgctc ttgcccggcg tcaatacggg 2880
ataataccgc gccacatagc agaactttaa aagtgctcat cattggaaaa cgttcttcgg 2940
ggcgaaaact ctcaaggatc ttaccgctgt tgagatccag ttcgatgtaa cccactcgtg 3000
cacccaactg atcttcagca tcttttactt tcaccagcgt ttctgggtga gcaaaaacag 3060
gaaggcaaaa tgccgcaaaa aagggaataa gggcgacacg gaaatgttga atactcatac 3120
tcttcctttt tcaatattat tgaagcattt atcagggtta ttgtctcatg agcggataca 3180
tatttgaatg tatttagaaa aataaacaaa tagggg ttcc gcgcacattt ccccgaaaag 3240
tgccacctga cgcgccctgt agcggcgcat taagcgcggc gggtgtggtg gttacgcgca 3300
```

18

```
gcgtgaccgc tacacttgcc agcgccctag cgcccgctcc tttcgctttc ttcccttcct 3360
ttctcgccac gttcgccggc tttccccgtc aagctctaaa tcggggctc cctttagggt 3420
tccgatttag tgctttacgg cacctcgacc ccaaaaaact tgattaggggt gatggttcac 3480
gtagtgggcc atcgccctga tagacggttt ttcgcccttt gacgttggag tccacgttct 3540
ttaatagtgg actcttgttc caaactggaa caacactcaa ccctatctcg gtctattctt 3600
ttgatttata agggattttg ccgatttcgg cctattggtt aaaaaatgag ctgatttaac 3660
aaaaatttaa cgcgaatttt aacaaaatat taacgtttac aatttcccat tcgccattca 3720
ggctgcgcaa ctgttgggaa gggcgatcgg tgcggcctc ttcgctatta cgccagccca 3780
agctaccatg ataagtaagt aatattaagg tacgggaggt acttggagcg ccgcaataa 3840
aatatcttta ttttcattac atctgtgtgt tggttttttg tgtgaatcga tagtactaac 3900
atacgctctc catcaaaaca aaacgaaaca aaacaaacta gcaaatagg ctgtccccag 3960
tgcaagtgca ggtgcc                                                3976


<210> 50
<211> 5325
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
     pGHRH1-44WTSK2014 construct

<400> 50
ggtaccgcta taggagagaa aagagctgca ctgagcaccc tccttcccct ttaaatgtca 60
acagattagg agtcagtgaa tgacagcaca cctcttgcta ccttagagac caaaatttaa 120
gctactcccc ttaagctata gctagagtgc acctgccagt gtctttagtc cccactgatg 180
gaacaggacc caaggtattg aagatggaac atagttattc attcatcctc taatttaaaa 240
agctggatat gctgtacagc agaaattgac ggaacaatgt aaatcaacta taacagaaga 300
aataaaaacc tggggggaaa gaagctgact atgaaacccc aggagctttc tacatgggcc 360
tggactcacc aaactcttta ttttgtaatg gacttctgac attttttagga agggctgtcc 420
tgatgtgggc tatagaagag ggtttcacat gcttcttcaa gaggacccac actgtcccag 480
ttgctgagtc ccaccaccag atgctagtgg cagctatttg gggaacactt aggcactaca 540
aaaaaatgag tgattccatt ctggctcaca ccatatccct gatgtacccc ttaaagcatg 600
tcactgagtt catcacagaa aattgtttcc cctgtgcctt ccacaacaag gttagagctg 660
tccttggggc caggggaagg gggcagggag tgagaagcac caactggata acctcctctg 720
accccactc caccttacca taagtagatc caaatccttc tagaaaatta ggaaggcata 780
tccccatata tcagcgatat aaatagaact gcttcagcgc tctggtagac ggtgactctc 840
caaggtggac tgggaggcag cctggccttg gctgggcatc gtcctctaaa tagaaagatg 900
aacttgttca gcctttccag aaggaaaact gctgccagc ctacagtgca acgtccttgt 960
cttccatctg gaggaagcac gggtgacata tcatctagta agggcacctc tctgtttcca 1020
cctccaggtc gaggggtgtg acccttactt ctcagcctca agggagggac actcaacccc 1080
ccaaaaagac atgagggcgc tcagctcggc ccaccgcacc cggaccgga gccgtcaccc 1140
cccgaaattc actcccttca caagcccca agcgcgttct ctggtgcgga ctgctccggg 1200
gccctggctt tgtgcccagc gttgtcagag ccaccgccct gagcctgtcc ccgggagccc 1260
cgcgcctcct cccaccgctc cgctctcgcg ccccgcggcc agttgtctgc cccgagacag 1320
ctgcgcgccc tcccgctgcc ggtggccctc tccggtgggg gtgggaccg acagggtcag 1380
ccctccggat ccggggcgct ccgggtagcg gggagaagtg atcgctgggg agctggggga 1440
```

19

```
ggggtcgcct tcctgcccta cccaggactc cgggtgcgac cgctcctcta tctctccagc 1500
ccaccaccac tccaccactt ggacacgtct ccctcctccc tggagtcgct ctagagggtt 1560
tgggggtctg agtaaagaac ccgaagtagg gatacagtgt ggcggcacct tccagaggcc 1620
ccgggcgcag ggtagaccgg ggcggggcgg cccgcggaca ggtgcagccc caggcgcagg 1680
cgcactcgcg cctcccggcg caggcggtga acctcgcccc accccagccc ctccggggg 1740
cagctgggcc gggtcgggag gggcccacca gcccgggaga cactccatat acggccaggc 1800
ccgctttacc tgggctccgg ccaggccgct ccttctttgg tcagcacagg ggacccgggc 1860
ggggggcccag gccgctaacc cgccggggga ggggggctcca gtgcccaaca cccaaatatg 1920
gctcgagaag gggagcgaca ttccagtgag gcggctcggg gggagaaccc gcgggctata 1980
taaaacctga gcgtggggac cagcggccaa gcttgccacc atgccactct gggtgttctt 2040
ctttgtgatc ctcaccctca gcaacagctc ccactgctcc ccacctcccc ctttgaccct 2100
caggatgcgg cggtatgcag atgccatctt caccaacagc taccggaagg tgctgggcca 2160
gctgtccgcc cgcaagctgc tccaggacat catgagcagg cagcagggag agagaaacca 2220
agagcaagga gcaaggggtgc ggctttgatc tagagtcggg gcggccggcc gcttcgagca 2280
gacatgataa gatacattga tgagtttgga caaaccacaa ctagaatgca gtgaaaaaaa 2340
tgctttattt gtgaaatttg tgatgctatt gctttatttg taaccattat aagctgcaat 2400
aaacaagtta acaacaacaa ttgcattcat tttatgtttc aggttcaggg ggaggtgtgg 2460
gaggtttttt aaagcaagta aaacctctac aaatgtggta aaatcgataa ggatccgtcg 2520
accgatgccc ttgagagcct tcaacccagt cagctccttc cggtgggcgc ggggcatgac 2580
tatcgtcgcc gcacttatga ctgtcttctt tatcatgcaa ctcgtaggac aggtgccggc 2640
agcgctcttc cgcttcctcg ctcactgact cgctgcgctc ggtcgttcgg ctgcggcgag 2700
cggtatcagc tcactcaaag gcggtaatac ggttatccac agaatcaggg gataacgcag 2760
gaaagaacat gtgagcaaaa ggccagcaaa aggccaggaa ccgtaaaaag gccgcgttgc 2820
tggcgttttt ccataggctc cgcccccctg acgagcatca caaaaatcga cgctcaagtc 2880
agaggtggcg aaacccgaca ggactataaa gataccaggc gtttccccct ggaagctccc 2940
tcgtgcgctc tcctgttccg accctgccgc ttaccggata cctgtccgcc tttctccctt 3000
cgggaagcgt ggcgctttct caatgctcac gctgtaggta tctcagttcg gtgtaggtcg 3060
ttcgctccaa gctgggctgt gtgcacgaac cccccgttca gcccgaccgc tgcgccttat 3120
ccggtaacta tcgtcttgag tccaacccgg taagacacga cttatcgcca ctggcagcag 3180
ccactggtaa caggattagc agagcgaggt atgtaggcgg tgctacagag ttcttgaagt 3240
ggtggcctaa ctacggctac actagaagga cagtatttgg tatctgcgct ctgctgaagc 3300
cagttacctt cggaaaaaga gttggtagct cttgatccgg caaacaaacc accgctggta 3360
gcggtggttt ttttgtttgc aagcagcaga ttacgcgcag aaaaaaagga tctcaagaag 3420
atcctttgat cttttctacg gggtctgacg ctcagtggaa cgaaaactca cgttaaggga 3480
ttttggtcat gagattatca aaaaggatct tcacctagat ccttttaaat taaaaatgaa 3540
gttttaaatc aatctaaagt atatatgagt aaacttggtc tgacagttac caatgcttaa 3600
tcagtgaggc acctatctca gcgatctgtc tatttcgttc atccatagtt gcctgactcc 3660
ccgtcgtgta gataactacg atacgggagg gcttaccatc tggccccagt gctgcaatga 3720
taccgcgaga cccacgctca ccggctccag atttatcagc aataaaccag ccagccggaa 3780
gggccgagcg cagaagtggt cctgcaactt tatccgcctc catccagtct attaattgtt 3840
gccgggaagc tagagtaagt agttcgccag ttaatagttt cgcaacgtt gttgccattg 3900
ctacaggcat cgtggtgtca cgctcgtcgt ttggtatggc ttcattcagc tccggttccc 3960
aacgatcaag gcgagttaca tgatccccca tgttgtgcaa aaaagcggtt agctccttcg 4020
gtcctccgat cgttgtcaga agtaagttgg ccgcagtgtt atcactcatg gttatggcag 4080
cactgcataa ttctcttact gtcatgccat ccgtaagatg cttttctgtg actggtgagt 4140
actcaaccaa gtcattctga gaatagtgta tgcggcgacc gagttgctct gcccggcgt 4200
caatacggga taataccgcg ccacatagca gaactttaaa agtgctcatc attggaaaac 4260
gttcttcggg gcgaaaactc tcaaggatct taccgctgtt gagatccagt tcgatgtaac 4320
```

20

```
ccactcgtgc acccaactga tcttcagcat cttttacttt caccagcgtt tctgggtgag 4380
caaaaacagg aaggcaaaat gccgcaaaaa agggaataag ggcgacacgg aaatgttgaa 4440
tactcatact cttccttttt caatattatt gaagcattta tcagggttat tgtctcatga 4500
gcggatacat atttgaatgt atttagaaaa ataaacaaat aggggttccg cgcacatttc 4560
cccgaaaagt gccacctgac gcgccctgta gcggcgcatt aagcgcggcg ggtgtggtgg 4620
ttacgcgcag cgtgaccgct acacttgcca gcgccctagc gcccgctcct ttcgctttct 4680
tcccttcctt tctcgccacg ttcgccggct ttccccgtca agctctaaat cggggggctcc 4740
ctttagggtt ccgatttagt gctttacggc acctcgaccc caaaaaactt gattagggtg 4800
atggttcacg tagtgggcca tcgccctgat agacggtttt tcgccctttg acgttggagt 4860
ccacgttctt taatagtgga ctcttgttcc aaactggaac aacactcaac cctatctcgg 4920
tctattcttt tgatttataa gggattttgc cgatttcggc ctattggtta aaaaatgagc 4980
tgatttaaca aaaatttaac gcgaatttta acaaaatatt aacgtttaca atttcccatt 5040
cgccattcag gctgcgcaac tgttgggaag ggcgatcggt gcgggcctct tcgctattac 5100
gccagcccaa gctaccatga taagtaagta atattaaggt acgggaggta cttggagcgg 5160
ccgcaataaa atatctttat tttcattaca tctgtgtgtt ggttttttgt gtgaatcgat 5220
agtactaaca tacgctctcc atcaaaacaa aacgaaacaa aacaaactag caaaataggc 5280
tgtccccagt gcaagtgcag gtgccagaac atttctctat cgata            5325


<210> 51
<211> 5108
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
     pGHRH1-29WTCMV construct

<400> 51
gctgtgcctt ctagttgcca gccatctgtt gtttgcccct cccccgtgcc ttccttgacc 60
ctggaaggtg ccactcccac tgtcctttcc taataaaatg aggaaattgc atcgcattgt 120
ctgagtaggt gtcattctat tctggggggt ggggtggggc aggacagcaa gggggaggat 180
tgggaagaca atagcaggca tgctggggat gcggtgggct ctatgggtac ccaggtgctg 240
aagaattgac ccggttcctc ctgggccaga aagaagcagg cacatcccct tctctgtgac 300
acaccctgtc cacgccctg gttcttagtt ccagccccac tcataggaca ctcatagctc 360
aggagggctc cgccttcaat cccacccgct aaagtacttg gagcggtctc tccctccctc 420
atcagcccac caaaccaaac ctagcctcca agagtgggaa gaaattaaag caagataggc 480
tattaagtgc agagggagag aaaatgcctc caacatgtga ggaagtaatg agagaaatca 540
tagaatttct tccgcttcct cgctcactga ctcgctgcgc tcggtcgttc ggctgcggcg 600
agcggtatca gctcactcaa aggcggtaat acggttatcc acagaatcag gggataacgc 660
aggaaagaac atgtgagcaa aaggccagca aaaggccagg aaccgtaaaa aggccgcgtt 720
gctggcgttt ttccataggc tccgcccccc tgacgagcat cacaaaaatc gacgctcaag 780
tcagaggtgg cgaaacccga caggactata aagataccag gcgtttcccc ctggaagctc 840
cctcgtgcgc tctcctgttc cgaccctgcc gcttaccgga tacctgtccg cctttctccc 900
ttcgggaagc gtggcgcttt ctcatagctc acgctgtagg tatctcagtt cggtgtaggt 960
cgttcgctcc aagctgggct gtgtgcacga accccccgtt cagcccgacc gctgcgcctt 1020
atccggtaac tatcgtcttg agtccaaccc ggtaagacac gacttatcgc cactggcagc 1080
agccactggt aacaggatta gcagagcgag gtatgtaggc ggtgctacag agttcttgaa 1140
```

21

```
gtggtggcct aactacggct acactagaag aacagtattt ggtatctgcg ctctgctgaa 1200
gccagttacc ttcggaaaaa gagttggtag ctcttgatcc ggcaaacaaa ccaccgctgg 1260
tagcggtggt ttttttgttt gcaagcagca gattacgcgc agaaaaaaag gatctcaaga 1320
agatcctttg atcttttcta cggggtctga cgctcagtgg aacgaaaact cacgttaagg 1380
gattttggtc atgagattat caaaaaggat cttcacctag atccttttaa attaaaaatg 1440
aagttttaaa tcaatctaaa gtatatatga gtaaacttgg tctgacagtt accaatgctt 1500
aatcagtgag gcacctatct cagcgatctg tctatttcgt tcatccatag ttgcctgact 1560
cggggggggg gggcgctgag gtctgcctcg tgaagaaggt gttgctgact cataccaggc 1620
ctgaatcgcc ccatcatcca gccagaaagt gagggagcca cggttgatga gagctttgtt 1680
gtaggtggac cagttggtga ttttgaactt ttgctttgcc acggaacggt ctgcgttgtc 1740
gggaagatgc gtgatctgat ccttcaactc agcaaaagtt cgatttattc aacaaagccg 1800
ccgtcccgtc aagtcagcgt aatgctctgc cagtgttaca accaattaac caattctgat 1860
tagaaaaact catcgagcat caaatgaaac tgcaatttat tcatatcagg attatcaata 1920
ccatattttt gaaaaagccg tttctgtaat gaaggagaaa actcaccgag gcagttccat 1980
aggatggcaa gatcctggta tcggtctgcg attccgactc gtccaacatc aatacaacct 2040
attaatttcc cctcgtcaaa aataaggtta tcaagtgaga atcaccatg agtgacgact 2100
gaatccggtg agaatggcaa aagcttatgc atttctttcc agacttgttc aacaggccag 2160
ccattacgct cgtcatcaaa atcactcgca tcaaccaaac cgttattcat tcgtgattgc 2220
gcctgagcga gacgaaatac gcgatcgctg ttaaaaggac aattacaaac aggaatcgaa 2280
tgcaaccggc gcaggaacac tgccagcgca tcaacaatat tttcacctga atcaggatat 2340
tcttctaata cctggaatgc tgttttcccg gggatcgcag tggtgagtaa ccatgcatca 2400
tcaggagtac ggataaaatg cttgatggtc ggaagaggca taaattccgt cagccagttt 2460
agtctgacca tctcatctgt aacatcattg gcaacgctac ctttgccatg tttcagaaac 2520
aactctggcg catcgggctt cccatacaat cgatagattg tcgcacctga ttgcccgaca 2580
ttatcgcgag cccatttata cccatataaa tcagcatcca tgttggaatt taatcgcggc 2640
ctcgagcaag acgtttcccg ttgaatatgg ctcataacac cccttgtatt actgtttatg 2700
taagcagaca gttttattgt tcatgatgat atattttttat cttgtgcaat gtaacatcag 2760
agattttgag acacaacgtg ctttcccccc ccccccatt attgaagcat ttatcaggt 2820
tattgtctca tgagcggata catatttgaa tgtatttaga aaaataaaca aataggggtt 2880
ccgcgcacat ttccccgaaa agtgccacct gacgtctaag aaaccattat tatcatgaca 2940
ttaacctata aaaataggcg tatcacgagg ccctttcgtc ctcgcgcgtt tcggtgatga 3000
cggtgaaaac ctctgacaca tgcagctccc ggagacggtc acagcttgtc tgtaagcgga 3060
tgccgggagc agacaagccc gtcagggcgc gtcagcgggt gttggcgggt gtcggggctg 3120
gcttaactat gcggcatcag agcagattgt actgagagtg caccatatgc ggtgtgaaat 3180
accgcacaga tgcgtaagga gaaaataccg catcagattg gctattggcc attgcatacg 3240
ttgtatccat atcataatat gtacatttat attggctcat gtccaacatt accgccatgt 3300
tgacattgat tattgactag ttattaatag taatcaatta cggggtcatt agttcatagc 3360
ccatatatgg agttccgcgt tacataactt acggtaaatg cccgcctgg ctgaccgccc 3420
aacgaccccc gcccattgac gtcaataatg acgtatgttc ccatagtaac gccaataggg 3480
actttccatt gacgtcaatg ggtggagtat ttacggtaaa ctgcccactt ggcagtacat 3540
caagtgtatc atatgccaag tacgccccct attgacgtca atgacggtaa atggcccgcc 3600
tggcattatg cccagtacat gaccttatgg gactttccta cttggcagta catctacgta 3660
ttagtcatcg ctattaccat ggtgatgcgg ttttggcagt acatcaatgg gcgtggatag 3720
cggtttgact cacggggatt ccaagtctc caccccattg acgtcaatgg gagtttgttt 3780
tggcaccaaa atcaacggga ctttccaaaa tgtcgtaaca actccgcccc attgacgcaa 3840
atggcggta ggcgtgtacg gtgggaggtc tatataagca gagctcgttt agtgaaccgt 3900
cagatcgcct ggagacgcca tccacgctgt tttgacctcc atagaagaca ccgggaccga 3960
tccagcctcc gcggccggga acggtgcatt ggaacgcgga ttccccgtgc caagagtgac 4020
```

22

```
gtaagtaccg cctatagact ctataggcac acccctttgg ctcttatgca tgctatactg 4080
tttttggctt ggggcctata cacccccgct tccttatgct ataggtgatg gtatagctta 4140
gcctataggt gtgggttatt gaccattatt gaccactccc ctattggtga cgatactttc 4200
cattactaat ccataacatg gctctttgcc acaactatct ctattggcta tatgccaata 4260
ctctgtcctt cagagactga cacggactct gtattttac aggatggggt cccatttatt 4320
atttacaaat tcacatatac aacaacgccg tcccccgtgc ccgcagtttt tattaaacat 4380
agcgtgggat ctccacgcga atctcgggta cgtgttccgg acatgggctc ttctccggta 4440
gcggcggagc ttccacatcc gagccctggt cccatgcctc cagcggctca tggtcgctcg 4500
gcagctcctt gctcctaaca gtggaggcca gacttaggca cagcacaatg cccaccacca 4560
ccagtgtgcc gcacaaggcc gtggcggtag ggtatgtgtc tgaaaatgag cgtggagatt 4620
gggctcgcac ggctgacgca gatggaagac ttaaggcagc ggcagaagaa gatgcaggca 4680
gctgagttgt tgtattctga taagagtcag aggtaactcc cgttgcggtg ctgttaacgg 4740
tggagggcag tgtagtctga gcagtactcg ttgctgccgc gcgcgccacc agacataata 4800
gctgacagac taacagactg ttcctttcca tgggtctttt ctgcagtcac cgtcgtcgac 4860
acgtgtgatc agatatcgcg gccgctctag accaggcgcc tggatccgcc accatgccac 4920
tctgggtgtt cttctttgtg atcctcaccc tcagcaacag ctccccactgc tccccacctc 4980
ccccctttgac cctcaggatg cggcggtatg cagatgccat cttcaccaac agctaccgga 5040
aggtgctggg ccagctgtcc gcccgcaagc tgctccagga catcatgagc aggtagagat 5100
ccagatct                                                          5108
```

<210> 52
<211> 5108
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
    pGHRH1-29YWTCMV construct

<400> 52
```
gctgtgcctt ctagttgcca gccatctgtt gtttgcccct ccccgtgcc ttccttgacc 60
ctggaaggtg ccactcccac tgtcctttcc taataaaatg aggaaattgc atcgcattgt 120
ctgagtaggt gtcattctat tctggggggt ggggtggggc aggacagcaa gggggaggat 180
tgggaagaca atagcaggca tgctggggat gcggtgggct ctatgggtac ccaggtgctg 240
aagaattgac ccggttcctc ctgggccaga aagaagcagg cacatcccct tctctgtgac 300
acaccctgtc cacgcccctg gttcttagtt ccagccccac tcataggaca ctcatagctc 360
aggagggctc cgccttcaat cccacccgct aaagtacttg gagcggtctc tccctccctc 420
atcagcccac caaaccaaac ctagcctcca agagtgggaa gaaattaaag caagataggc 480
tattaagtgc agaggagag aaaatgcctc caacatgtga ggaagtaatg agagaaatca 540
tagaatttct tccgcttcct cgctcactga ctcgctgcgc tcggtcgttc ggctgcggcg 600
agcggtatca gctcactcaa aggcggtaat acggttatcc acagaatcag gggataacgc 660
aggaaagaac atgtgagcaa aaggccagca aaaggccagg aaccgtaaaa aggccgcgtt 720
gctggcgttt ttccataggc tccgcccccc tgacgagcat cacaaaaatc gacgctcaag 780
tcagaggtgg cgaaacccga caggactata aagataccag gcgtttcccc ctggaagctc 840
cctcgtgcgc tctcctgttc cgaccctgcc gcttaccgga tacctgtccg cctttctccc 900
ttcgggaagc gtggcgcttt ctcatagctc acgctgtagg tatctcagtt cggtgtaggt 960
cgttcgctcc aagctgggct gtgtgcacga accccccgtt cagcccgacc gctgcgcctt 1020
```

```
atccggtaac tatcgtcttg agtccaaccc ggtaagacac gacttatcgc cactggcagc 1080
agccactggt aacaggatta gcagagcgag gtatgtaggc ggtgctacag agttcttgaa 1140
gtggtggcct aactacggct acactagaag aacagtattt ggtatctgcg ctctgctgaa 1200
gccagttacc ttcggaaaaa gagttggtag ctcttgatcc ggcaaacaaa ccaccgctgg 1260
tagcggtggt ttttttgttt gcaagcagca gattacgcgc agaaaaaaag gatctcaaga 1320
agatcctttg atcttttcta cggggtctga cgctcagtgg aacgaaaact cacgttaagg 1380
gattttggtc atgagattat caaaaaggat cttcacctag atccttttaa attaaaaatg 1440
aagttttaaa tcaatctaaa gtatatatga gtaaacttgg tctgacagtt accaatgctt 1500
aatcagtgag gcacctatct cagcgatctg tctatttcgt tcatccatag ttgcctgact 1560
cggggggggg gggcgctgag gtctgcctcg tgaagaaggt gttgctgact cataccaggc 1620
ctgaatcgcc ccatcatcca gccagaaagt gagggagcca cggttgatga gagctttgtt 1680
gtaggtggac cagttggtga ttttgaactt ttgctttgcc acggaacggt ctgcgttgtc 1740
gggaagatgc gtgatctgat ccttcaactc agcaaaagtt cgatttattc aacaaagccg 1800
ccgtcccgtc aagtcagcgt aatgctctgc cagtgttaca accaattaac caattctgat 1860
tagaaaaact catcgagcat caaatgaaac tgcaatttat tcatatcagg attatcaata 1920
ccatatttttt gaaaaagccg tttctgtaat gaaggagaaa actcaccgag gcagttccat 1980
aggatggcaa gatcctggta tcggtctgcg attccgactc gtccaacatc aatacaacct 2040
attaatttcc cctcgtcaaa aataaggtta tcaagtgaga aatcaccatg agtgacgact 2100
gaatccggtg agaatggcaa aagcttatgc atttctttcc agacttgttc aacaggccag 2160
ccattacgct cgtcatcaaa atcactcgca tcaaccaaac cgttattcat tcgtgattgc 2220
gcctgagcga gacgaaatac gcgatcgctg ttaaaaggac aattacaaac aggaatcgaa 2280
tgcaaccggc gcaggaacac tgccagcgca tcaacaatat tttcacctga atcaggatat 2340
tcttctaata cctggaatgc tgttttcccg gggatcgcag tggtgagtaa ccatgcatca 2400
tcaggagtac ggataaaatg cttgatggtc ggaagaggca taaattccgt cagccagttt 2460
agtctgacca tctcatctgt aacatcattg gcaacgctac ctttgccatg tttcagaaac 2520
aactctggcg catcgggctt cccatacaat cgatagattg tcgcacctga ttgcccgaca 2580
ttatcgcgag cccatttata cccatataaa tcagcatcca tgttggaatt taatcgcggc 2640
ctcgagcaag acgtttcccg ttgaatatgg ctcataacac cccttgtatt actgtttatg 2700
taagcagaca gttttattgt tcatgatgat atattttat cttgtgcaat gtaacatcag 2760
agatttgag acacaacgtg ctttccccc ccccccatt attgaagcat ttatcagggt 2820
tattgtctca tgagcggata catatttgaa tgtatttaga aaaataaaca aataggggtt 2880
ccgcgcacat ttccccgaaa agtgccacct gacgtctaag aaaccattat tatcatgaca 2940
ttaacctata aaaataggcg tatcacgagg ccctttcgtc ctcgcgcgtt tcggtgatga 3000
cggtgaaaac ctctgacaca tgcagctccc ggagacggtc acagcttgtc tgtaagcgga 3060
tgccgggagc agacaagccc gtcagggcgc gtcagcgggt gttggcgggt gtcggggctg 3120
gcttaactat gcggcatcag agcagattgt actgagagtg caccatatgc ggtgtgaaat 3180
accgcacaga tgcgtaagga gaaaataccg catcagattg gctattggcc attgcatacg 3240
ttgtatccat atcataatat gtacatttat attggctcat gtccaacatt accgccatgt 3300
tgacattgat tattgactag ttattaatag taatcaatta cggggtcatt agttcatagc 3360
ccatatatgg agttccgcgt tacataactt acggtaaatg gcccgcctgg ctgaccgccc 3420
aacgacccccc gcccattgac gtcaataatg acgtatgttc ccatagtaac gccaataggg 3480
actttccatt gacgtcaatg ggtggagtat ttacggtaaa ctgcccactt ggcagtacat 3540
caagtgtatc atatgccaag tacgccccct attgacgtca atgacggtaa atggcccgcc 3600
tggcattatg cccagtacat gaccttatgg gactttccta cttggcagta catctacgta 3660
ttagtcatcg ctattaccat ggtgatgcgg ttttggcagt acatcaatgg gcgtggatag 3720
cggtttgact cacggggatt tccaagtctc cacccattg acgtcaatgg gagtttgttt 3780
tggcaccaaa atcaacggga ctttccaaaa tgtcgtaaca actccgcccc attgacgcaa 3840
atgggcggta ggcgtgtacg gtgggaggtc tatataagca gagctcgttt agtgaaccgt 3900
```

24

```
cagatcgcct ggagacgcca tccacgctgt tttgacctcc atagaagaca ccgggaccga 3960
tccagcctcc gcggccggga acggtgcatt ggaacgcgga ttccccgtgc caagagtgac 4020
gtaagtaccg cctatagact ctataggcac accccttggg ctcttatgca tgctatactg 4080
tttttggctt ggggcctata cacccccgct tccttatgct ataggtgatg gtatagctta 4140
gcctataggt gtgggttatt gaccattatt gaccactccc ctattggtga cgatactttc 4200
cattactaat ccataacatg gctctttgcc acaactatct ctattggcta tatgccaata 4260
ctctgtcctt cagagactga cacggactct gtatttttac aggatggggt cccatttatt 4320
atttacaaat tcacatatac aacaacgccg tcccccgtgc ccgcagtttt tattaaacat 4380
agcgtgggat ctccacgcga atctcgggta cgtgttccgg acatgggctc ttctccggta 4440
gcggcggagc ttccacatcc gagccctggt cccatgcctc cagcggctca tggtcgctcg 4500
gcagctcctt gctcctaaca gtggaggcca gacttaggca cagcacaatg cccaccacca 4560
ccagtgtgcc gcacaaggcc gtggcggtag ggtatgtgtc tgaaaatgag cgtggagatt 4620
gggctcgcac ggctgacgca gatggaagac ttaaggcagc ggcagaagaa gatgcaggca 4680
gctgagttgt tgtattctga taagagtcag aggtaactcc cgttgcggtg ctgttaacgg 4740
tggagggcag tgtagtctga gcagtactcg ttgctgccgc gcgcgccacc agacataata 4800
gctgacagac taacagactg ttcctttcca tgggtctttt ctgcagtcac cgtcgtcgac 4860
acgtgtgatc agatatcgcg gccgctctag accaggcgcc tggatccgcc accatgccac 4920
tctgggtgtt cttctttgtg atcctcaccc tcagcaacag ctcccactgc tccccacctc 4980
ccccctttgac cctcaggatg cggcggtatg cagatgccat cttcaccaac agctaccgga 5040
aggtgctggg ccagctgtcc gcccgcaagc tcctccagga catcatgagc aggtagagat 5100
ccagatct                                                           5108


<210> 53
<211> 3954
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
      pGHRH1-29YWTSK685 construct

<400> 53
ggtaccatcg ctggggagct ggggggaggg tcgccttcct gccctaccca ggactccggg 60
tgcgaccgct cctctatctc tccagcccac caccactcca ccacttggac acgtctccct 120
cctccctgga gtcgctctag agggtttggg ggtctgagta aagaacccga agtagggata 180
cagtgtggcg gcaccttcca gaggccccgg gcgcagggta gaccggggcg gggcggcccg 240
cggacaggtg cagccccagg cgcaggcgca ctcgcgcctc ccggcgcagg cggtgaacct 300
cgccccaccc cagcccctcc gggggcagc tgggccgggt cgggaggggc ccaccagccc 360
gggagacact ccatatacgg ccaggcccgc tttacctggg ctccggccag gccgctcctt 420
ctttggtcag cacaggggac ccgggcgggg gcccaggccg ctaacccgcc ggggggagggg 480
gctccagtgc ccaacaccca aatatggctc gagaagggga gcgacattcc agtgaggcgg 540
ctcggggga aacccgcgg gctatataaa acctgagcgt ggggaccagc ggccaccgca 600
gcggacagcg ccgagagaag cctcgcttcc ctcccgcggc gaccagggcc ccagccggag 660
agcagcaggt gtagccacca agcttgccac catgccactc tgggtgttct tctttgtgat 720
cctcaccctc agcaacagct cccactgctc cccacctccc cctttgaccc tcaggatgcg 780
gcggtattat gcagatgcca tcttcaccaa cagctaccgg aaggtgctgg gccagctgtc 840
cgcccgcaag ctcctccagg acatcatgag caggtagtct agagtcgggg cggccggccg 900
```

```
cttcgagcag acatgataag atacattgat gagtttggac aaaccacaac tagaatgcag 960
tgaaaaaaat gctttatttg tgaaatttgt gatgctattg ctttatttgt aaccattata 1020
agctgcaata aacaagttaa caacaacaat tgcattcatt ttatgtttca ggttcagggg 1080
gaggtgtggg aggttttta aagcaagtaa aacctctaca aatgtggtaa aatcgataag 1140
gatccgtcga ccgatgccct tgagagcctt caacccagtc agctccttcc ggtgggcgcg 1200
gggcatgact atcgtcgccg cacttatgac tgtcttcttt atcatgcaac tcgtaggaca 1260
ggtgccggca gcgctcttcc gcttcctcgc tcactgactc gctgcgctcg tcgttcggc 1320
tgcggcgagc ggtatcagct cactcaaagg cggtaatacg gttatccaca gaatcagggg 1380
ataacgcagg aaagaacatg tgagcaaaag gccagcaaaa ggccaggaac cgtaaaaagg 1440
ccgcgttgct ggcgtttttc cataggctcc gcccccctga cgagcatcac aaaaatcgac 1500
gctcaagtca gaggtggcga aacccgacag gactataaag ataccaggcg tttccccctg 1560
gaagctccct cgtgcgctct cctgttccga ccctgccgct taccggatac ctgtccgcct 1620
ttctcccttc gggaagcgtg cgctttctc aatgctcacg ctgtaggtat ctcagttcgg 1680
tgtaggtcgt tcgctccaag ctgggctgtg tgcacgaacc ccccgttcag cccgaccgct 1740
gcgccttatc cggtaactat cgtcttgagt ccaacccggt aagacacgac ttatcgccac 1800
tggcagcagc cactggtaac aggattagca gagcgaggta tgtaggcggt gctacagagt 1860
tcttgaagtg gtggcctaac tacggctaca ctagaaggac agtatttggt atctgcgctc 1920
tgctgaagcc agttaccttc ggaaaaagag ttggtagctc ttgatccggc aaacaaacca 1980
ccgctggtag cggtggtttt tttgtttgca agcagcagat tacgcgcaga aaaaaggat 2040
ctcaagaaga tccttttgatc ttttctacgg ggtctgacgc tcagtggaac gaaaactcac 2100
gttaagggat tttggtcatg agattatcaa aaaggatctt cacctagatc ctttttaaatt 2160
aaaaatgaag ttttaaatca atctaaagta tatatgagta aacttggtct gacagttacc 2220
aatgcttaat cagtgaggca cctatctcag cgatctgtct atttcgttca tccatagttg 2280
cctgactccc cgtcgtgtag ataactacga tacgggaggg cttaccatct ggccccagtg 2340
ctgcaatgat accgcgagac ccacgctcac cggctccaga tttatcagca ataaaccagc 2400
cagccggaag ggccgagcgc agaagtggtc ctgcaacttt atccgcctcc atccagtcta 2460
ttaattgttg ccgggaagct agagtaagta gttcgccagt taatagtttg cgcaacgttg 2520
ttgccattgc tacaggcatc gtggtgtcac gctcgtcgtt tggtatggct tcattcagct 2580
ccggttccca acgatcaagg cgagttacat gatcccccat gttgtgcaaa aaagcggtta 2640
gctccttcgg tcctccgatc gttgtcagaa gtaagttggc cgcagtgtta tcactcatgg 2700
ttatggcagc actgcataat tctcttactg tcatgccatc cgtaagatgc ttttctgtga 2760
ctggtgagta ctcaaccaag tcattctgag aatagtgtat gcggcgaccg agttgctctt 2820
gcccggcgtc aatacgggat aataccgcgc cacatagcag aactttaaaa gtgctcatca 2880
ttggaaaacg ttcttcgggg cgaaaactct caaggatctt accgctgttg agatccagtt 2940
cgatgtaacc cactcgtgca cccaactgat cttcagcatc ttttactttc accagcgttt 3000
ctgggtgagc aaaaacagga aggcaaaatg ccgcaaaaaa gggaataagg gcgacacgga 3060
aatgttgaat actcatactc ttcctttttc aatattattg aagcatttat cagggttatt 3120
gtctcatgag cggatacata tttgaatgta tttagaaaaa taaacaaata ggggttccgc 3180
gcacatttcc ccgaaaagtg ccacctgacg cgccctgtag cggcgcatta agcgcggcgg 3240
gtgtggtggt tacgcgcagc gtgaccgcta cacttgccag cgccctagcg cccgctcctt 3300
tcgctttctt cccttccttt ctcgccacgt tcgccggctt tccccgtcaa gctctaaatc 3360
gggggctccc tttagggttc cgatttagtg ctttacggca cctcgacccc aaaaaacttg 3420
attagggtga tggttcacgt agtgggccat cgccctgata gacggttttt cgccctttga 3480
cgttggagtc cacgttcttt aatagtggac tcttgttcca aactggaaca cactcaacc 3540
ctatctcggt ctattctttt gatttataag gatttttgcc gatttcggcc tattggttaa 3600
aaaatgagct gatttaacaa aaatttaacg cgaattttaa caaaatatta cgtttacaa 3660
tttcccattc gccattcagg ctgcgcaact gttgggaagg cgatcggtg cgggcctctt 3720
cgctattacg ccagcccaag ctaccatgat aagtaagtaa tattaaggta cgggaggtac 3780
```

26

```
ttggagcggc cgcaataaaa tatctttatt ttcattacat ctgtgtgttg gtttttttgtg 3840
tgaatcgata gtactaacat acgctctcca tcaaaacaaa acgaaacaaa acaaactagc 3900
aaaataggct gtccccagtg caagtgcagg tgccagaaca tttctctatc gata        3954
```


<210> 54
<211> 5163
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
      pGHRH1-29YWTSK2014 construct

<400> 54
```
ggtaccgcta taggagagaa aagagctgca ctgagcaccc tccttccccct ttaaatgtca 60
acagattagg agtcagtgaa tgacagcaca cctcttgcta ccttagagac caaaatttaa 120
gctactcccc ttaagctata gctagagtgc acctgccagt gtctttagtc cccactgatg 180
gaacaggacc caaggtattg aagatggaac atagttattc attcatcctc taatttaaaa 240
agctggatat gctgtacagc agaaattgac ggaacaatgt aaatcaacta taacagaaga 300
aataaaaacc tgggggggaaa gaagctgact atgaaacccc aggagctttc tacatgggcc 360
tggactcacc aaactctttta ttttgtaatg gacttctgac atttttagga agggctgtcc 420
tgatgtgggc tatagaagag ggtttcacat gcttcttcaa gaggacccac actgtcccag 480
ttgctgagtc ccaccaccag atgctagtgg cagctatttg gggaacactt aggcactaca 540
aaaaaatgag tgattccatt ctggctcaca ccatatccct gatgtacccc ttaaagcatg 600
tcactgagtt catcacagaa aattgtttcc cctgtgcctt ccacaacaag gttagagctg 660
tccttggggc caggggaagg gggcagggag tgagaagcac caactggata acctcctctg 720
accccactc. caccttacca taagtagatc caaatccttc tagaaaatta ggaaggcata 780
tccccatata tcagcgatat aaatagaact gcttcagcgc tctggtagac ggtgactctc 840
caaggtggac tgggaggcag cctggccttg gctgggcatc gtcctctaaa tagaaagatg 900
aacttgttca gcctttccag aaggaaaact gctgcccagc ctacagtgca acgtccttgt 960
cttccatctg gaggaagcac gggtgacata tcatctagta agggcacctc tctgtttcca 1020
cctccaggtc gagggggtgtg accccttactt ctcagcctca agggagggac actcaacccc 1080
ccaaaaagac atgagggcgc tcagctcggc ccaccgcacc ccggaccgga gccgtcaccc 1140
cccgaaattc actcccttca caagcccccca agcgcgttct ctggtgcgga ctgctccggg 1200
gccctggctt tgtgcccagc gttgtcagag ccaccgccct gagcctgtcc ccgggagccc 1260
cgcgcctcct cccaccgctc cgctctcgcg ccccgcggcc agttgtctgc cccgagacag 1320
ctgcgcgccc tcccgctgcc ggtggccctc tccggtgggg gtggggaccg acagggtcag 1380
ccctccggat ccggggcgct ccgggtagcg gggagaagtg atcgctgggg agctggggga 1440
ggggtcgcct tcctgcccta cccaggactc cgggtgcgac cgctcctcta tctctccagc 1500
ccgggcgcag ggtagaccgg ggcggggcgg cccgcggaca ggtgcagccc caggcgcagg 1560
cgcactcgcg cctcccggcg caggcggtga acctcgcccc accccagccc ctccgggggg 1620
cagctgggcc gggtcgggag gggcccacca gcccgggaga cactccatat acggccaggc 1680
ccgctttacc tgggctccgg ccaggccgct ccttctttgg tcagcacagg ggacccgggc 1740
gggggcccag gccgctaacc cgccggggga gggggctcca gtgcccaaca cccaaatatg 1800
gctcgagaag gggagcgaca ttccagtgag gcggctcggg gggagaaccc gcgggctata 1860
taaaacctga gcgtgggggac cagcggccaa gcttgccacc atgccactct gggtgttctt 1920
ctttgtgatc ctcaccctca gcaacagctc ccactgctcc ccacctcccc ctttgacccct 1980
```

27

```
caggatgcgg cggtattatg cagatgccat cttcaccaac agctaccgga aggtgctggg 2040
ccagctgtcc gcccgcaagc tcctccagga catcatgagc aggtagtcta gagtcggggc 2100
ggccggccgc ttcgagcaga catgataaga tacattgatg agtttggaca aaccacaact 2160
agaatgcagt gaaaaaaatg ctttatttgt gaaatttgtg atgctattgc tttatttgta 2220
accattataa gctgcaataa acaagttaac aacaacaatt gcattcattt tatgtttcag 2280
gttcaggggg aggtgtggga ggttttttaa agcaagtaaa acctctacaa atgtggtaaa 2340
atcgataagg atccgtcgac cgatgccctt gagagccttc aacccagtca gctccttccg 2400
gtgggcgcgg ggcatgacta tcgtcgccgc acttatgact gtcttcttta tcatgcaact 2460
cgtaggacag gtgccggcag cgctcttccg cttcctcgct cactgactcg ctgcgctcgg 2520
tcgttcggct gcggcgagcg gtatcagctc actcaaaggc ggtaatacgg ttatccacag 2580
aatcagggga taacgcagga agaacatgt gagcaaaagg ccagcaaaag gccaggaacc 2640
gtaaaaaggc cgcgttgctg gcgtttttcc ataggctccg cccccctgac gagcatcaca 2700
aaaatcgacg ctcaagtcag aggtggcgaa acccgacagg actataaaga taccaggcgt 2760
ttccccctgg aagctccctc gtgcgctctc ctgttccgac cctgccgctt accggatacc 2820
tgtccgcctt tctcccttcg ggaagcgtgg cgctttctca atgctcacgc tgtaggtatc 2880
tcagttcggt gtaggtcgtt cgctccaagc tgggctgtgt gcacgaaccc cccgttcagc 2940
ccgaccgctg cgccttatcc ggtaactatc gtcttgagtc caacccggta agacacgact 3000
tatcgccact ggcagcagcc actggtaaca ggattagcag agcgaggtat gtaggcggtg 3060
ctacagagtt cttgaagtgg tggcctaact acggctacac tagaaggaca gtatttggta 3120
tctgcgctct gctgaagcca gttaccttcg gaaaaagagt tggtagctct tgatccggca 3180
aacaaaccac cgctggtagc ggtggttttt ttgtttgcaa gcagcagatt acgcgcagaa 3240
aaaaaggatc tcaagaagat cctttgatct tttctacggg gtctgacgct cagtggaacg 3300
aaaactcacg ttaagggatt ttggtcatga gattatcaaa aaggatcttc acctagatcc 3360
ttttaaatta aaaatgaagt tttaaatcaa tctaaagtat atatgagtaa acttggtctg 3420
acagttacca atgcttaatc agtgaggcac ctatctcagc gatctgtcta tttcgttcat 3480
ccatagttgc ctgactcccc gtcgtgtaga taactacgat acgggagggc ttaccatctg 3540
gccccagtgc tgcaatgata ccgcgagacc cacgctcacc ggctccagat ttatcagcaa 3600
taaaccagcc agccggaagg gccgagcgca gaagtggtcc tgcaacttta tccgcctcca 3660
tccagtctat taattgttgc cgggaagcta gagtaagtag ttcgccagtt aatagtttgc 3720
gcaacgttgt tgccattgct acaggcatcg tggtgtcacg ctcgtcgttt ggtatggctt 3780
cattcagctc cggttcccaa cgatcaaggc gagttacatg atccccatg ttgtgcaaaa 3840
aagcggttag ctccttcggt cctccgatcg ttgtcagaag taagttggcc gcagtgttat 3900
cactcatggt tatggcagca ctgcataatt ctcttactgt catgccatcc gtaagatgct 3960
tttctgtgac tggtgagtac tcaaccaagt cattctgaga atagtgtatg cggcgaccga 4020
gttgctcttg cccggcgtca atacgggata ataccgcgcc acatagcaga actttaaaag 4080
tgctcatcat tggaaaacgt tcttcggggc gaaaactctc aaggatctta ccgctgttga 4140
gatccagttc gatgtaaccc actcgtgcac ccaactgatc ttcagcatct tttactttca 4200
ccagcgtttc tgggtgagca aaaacaggaa ggcaaaatgc cgcaaaaaag ggaataaggg 4260
cgacacggaa atgttgaata ctcatactct ccttttttca atattattga agcatttatc 4320
agggttattg tctcatgagc ggatacatat ttgaatgtat ttagaaaaat aaacaaatag 4380
gggttccgcg cacatttccc cgaaaagtgc cacctgacgc gccctgtagc ggcgcattaa 4440
gcgcggcggg tgtggtggtt acgcgcagcg tgaccgctac acttgccagc gccctagcgc 4500
ccgctccttt cgctttcttc ccttcctttc tcgccacgtt cgccggcttt ccccgtcaag 4560
ctctaaatcg ggggctccct ttagggttcc gatttagtgc tttacggcac ctcgaccca 4620
aaaaacttga ttagggtgat ggttcacgta gtgggccatc gccctgatag acggttttttc 4680
gcccttttgac gttggagtcc acgttcttta atagtggact cttgttccaa actggaacaa 4740
cactcaaccc tatctcggtc tattctttttg atttataagg gattttgccg atttcggcct 4800
attggttaaa aaatgagctg atttaacaaa aatttaacgc gaattttaac aaaatattaa 4860
```

28

cgtttacaat ttcccattcg ccattcaggc tgcgcaactg ttgggaaggg cgatcggtgc 4920
gggcctcttc gctattacgc cagcccaagc taccatgata agtaagtaat attaaggtac 4980
gggaggtact tggagcggcc gcaataaaat atctttattt tcattacatc tgtgtgttgg 5040
ttttttgtgt gaatcgatag tactaacata cgctctccat caaaacaaaa cgaaacaaaa 5100
caaactagca aaataggctg tccccagtgc aagtgcaggt gccagaacat ttctctatcg 5160
ata   5163

<210> 55
<211> 5111
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
     pGHRH1-29Yala1522CMV construct

<400> 55
gctgtgcctt ctagttgcca gccatctgtt gtttgcccct cccccgtgcc ttccttgacc 60
ctggaaggtg ccactcccac tgtcctttcc taataaaatg aggaaattgc atcgcattgt 120
ctgagtaggt gtcattctat tctggggggt ggggtggggc aggacagcaa ggggggaggat 180
tgggaagaca atagcaggca tgctggggat gcggtgggct ctatgggtac ccaggtgctg 240
aagaattgac ccggttcctc ctgggccaga aagaagcagg cacatccccc tctctgtgac 300
acaccctgtc cacgcccctg gttcttagtt ccagccccac tcataggaca ctcatagctc 360
aggagggctc cgccttcaat cccacccgct aaagtacttg gagcggtctc tccctccctc 420
atcagcccac caaaccaaac ctagcctcca agagtgggaa gaaattaaag caagataggc 480
tattaagtgc agagggagag aaaatgcctc caacatgtga ggaagtaatg agagaaatca 540
tagaatttct tccgcttcct cgctcactga ctcgctgcgc tcggtcgttc ggctgcggcg 600
agcggtatca gctcactcaa aggcggtaat acggttatcc acagaatcag gggataacgc 660
aggaaagaac atgtgagcaa aaggccagca aaaggccagg aaccgtaaaa aggccgcgtt 720
gctggcgttt ttccataggc tccgcccccc tgacgagcat cacaaaaatc gacgctcaag 780
tcagaggtgg cgaaacccga caggactata aagataccag gcgtttcccc ctggaagctc 840
cctcgtgcgc tctcctgttc cgaccctgcc gcttaccgga tacctgtccg cctttctccc 900
ttcgggaagc gtggcgcttt ctcatagctc acgctgtagg tatctcagtt cggtgtaggt 960
cgttcgctcc aagctgggct gtgtgcacga accccccgtt cagcccgacc gctgcgcctt 1020
atccggtaac tatcgtcttg agtccaaccc ggtaagacac gacttatcgc cactggcagc 1080
agccactggt aacaggatta gcagagcgag gtatgtaggc ggtgctacag agttcttgaa 1140
gtggtggcct aactacggct acactagaag aacagtattt ggtatctgcg ctctgctgaa 1200
gccagttacc ttcggaaaaa gagttggtag ctcttgatcc ggcaaacaaa ccaccgctgg 1260
tagcggtggt tttttgttt gcaagcagca gattacgcgc agaaaaaaag gatctcaaga 1320
agatcctttg atcttttcta cggggtctga cgctcagtgg aacgaaaact cacgttaagg 1380
gattttggtc atgagattat caaaaaggat cttcacctag atccttttaa attaaaaatg 1440
aagttttaaa tcaatctaaa gtatatatga gtaaacttgg tctgacagtt accaatgctt 1500
aatcagtgag gcacctatct cagcgatctg tctatttcgt tcatccatag ttgcctgact 1560
cggggggggg gggcgctgag gtctgcctcg tgaagaaggt gttgctgact cataccaggc 1620
ctgaatcgcc ccatcatcca gccagaaagt gagggagcca cggttgatga gagctttgtt 1680
gtaggtggac cagttggtga ttttgaactt ttgctttgcc acggaacggt ctgcgttgtc 1740
gggaagatgc gtgatctgat ccttcaactc agcaaaagtt cgatttattc aacaaagccg 1800

29

```
ccgtcccgtc aagtcagcgt aatgctctgc cagtgttaca accaattaac caattctgat 1860
tagaaaaact catcgagcat caaatgaaac tgcaatttat tcatatcagg attatcaata 1920
ccatattttt gaaaaagccg tttctgtaat gaaggagaaa actcaccgag gcagttccat 1980
aggatggcaa gatcctggta tcggtctgcg attccgactc gtccaacatc aatacaacct 2040
attaatttcc cctcgtcaaa aataaggtta tcaagtgaga atcaccatg agtgacgact 2100
gaatccggtg agaatggcaa aagcttatgc atttctttcc agacttgttc aacaggccag 2160
ccattacgct cgtcatcaaa atcactcgca tcaaccaaac cgttattcat tcgtgattgc 2220
gcctgagcga gacgaaatac gcgatcgctg ttaaaaggac aattacaaac aggaatcgaa 2280
tgcaaccggc gcaggaacac tgccagcgca tcaacaatat tttcacctga atcaggatat 2340
tcttctaata cctggaatgc tgttttcccg gggatcgcag tggtgagtaa ccatgcatca 2400
tcaggagtac ggataaaatg cttgatggtc ggaagaggca taaattccgt cagccagttt 2460
agtctgacca tctcatctgt aacatcattg gcaacgctac ctttgccatg tttcagaaac 2520
aactctggcg catcgggctt cccatacaat cgatagattg tcgcacctga ttgcccgaca 2580
ttatcgcgag cccatttata cccatataaa tcagcatcca tgttggaatt taatcgcggc 2640
ctcgagcaag acgtttcccg ttgaatatgg ctcataacac cccttgtatt actgtttatg 2700
taagcagaca gttttattgt tcatgatgat atattttat cttgtgcaat gtaacatcag 2760
agattttgag acacaacgtg ctttcccccc ccccccatt attgaagcat ttatcagggt 2820
tattgtctca tgagcggata catatttgaa tgtatttaga aaaataaaca aataggggtt 2880
ccgcgcacat ttccccgaaa agtgccacct gacgtctaag aaaccattat tatcatgaca 2940
ttaacctata aaaataggcg tatcacgagg ccctttcgtc ctcgcgcgtt tcggtgatga 3000
cggtgaaaac ctctgacaca tgcagctccc ggagacggtc acagcttgtc tgtaagcgga 3060
tgccgggagc agacaagccc gtcaggcgc gtcagcgggt gttggcgggt gtcggggctg 3120
gcttaactat gcggcatcag agcagattgt actgagagtg caccatatgc ggtgtgaaat 3180
accgcacaga tgcgtaagga gaaaataccg catcagattg gctattggcc attgcatacg 3240
ttgtatccat atcataatat gtacatttat attggctcat gtccaacatt accgccatgt 3300
tgacattgat tattgactag ttattaatag taatcaatta cggggtcatt agttcatagc 3360
ccatatatgg agttccgcgt tacataactt acggtaaatg ccccgcctgg ctgaccgccc 3420
aacgacccc gcccattgac gtcaataatg acgtatgttc ccatagtaac gccaataggg 3480
actttccatt gacgtcaatg ggtggagtat ttacggtaaa ctgcccactt ggcagtacat 3540
caagtgtatc atatgccaag tacgccccct attgacgtca atgacggtaa atggcccgcc 3600
tggcattatg cccagtacat gaccttatgg gactttccta cttggcagta catctacgta 3660
ttagtcatcg ctattaccat ggtgatgcgg ttttggcagt acatcaatgg gcgtggatag 3720
cggtttgact cacggggatt tccaagtctc cacccattg acgtcaatgg gagtttgttt 3780
tggcaccaaa atcaacggga ctttccaaaa tgtcgtaaca actccgcccc attgacgcaa 3840
atgggcggta ggcgtgtacg gtgggaggtc tatataagca gagctcgttt agtgaaccgt 3900
cagatcgcct ggagacgcca tccacgctgt tttgacctcc atagaagaca ccgggaccga 3960
tccagcctcc gcggccggga acggtgcatt ggaacgcgga ttccccgtgc caagagtgac 4020
gtaagtaccg cctatagact ctataggcac acccctttgg ctcttatgca tgctatactg 4080
tttttggctt ggggcctata cacccccgct tccttatgct ataggtgatg gtatagctta 4140
gcctataggt gtgggttatt gaccattatt gaccactccc ctattggtga cgatactttc 4200
cattactaat ccataacatg gctctttgcc acaactatct ctattggcta tatgccaata 4260
ctctgtcctt cagagactga cacggactct gtatttttac aggatggggt cccatttatt 4320
atttacaaat tcacatatac aacaacgccg tcccccgtgc ccgcagtttt tattaaacat 4380
agcgtgggat ctccacgcga atctcgggta cgtgttccgg acatgggctc ttctccggta 4440
gcggcggagc ttccacatcc gagccctggt cccatgcctc cagcggctca tggtcgctcg 4500
gcagctcctt gctcctaaca gtggaggcca gacttaggca cagcacaatg cccaccacca 4560
ccagtgtgcc gcacaaggcc gtggcggtag ggtatgtgtc tgaaaatgag cgtggagatt 4620
gggctcgcac ggctgacgca gatggaagac ttaaggcagc ggcagaagaa gatgcaggca 4680
```

30

```
gctgagttgt tgtattctga taagagtcag aggtaactcc cgttgcggtg ctgttaacgg 4740
tggagggcag tgtagtctga gcagtactcg ttgctgccgc gcgcgccacc agacataata 4800
gctgacagac taacagactg ttcctttcca tgggtctttt ctgcagtcac cgtcgtcgac 4860
acgtgtgatc agatatcgcg ccgctctag accaggcgcc tggatccgcc accatgccac 4920
tctgggtgtt cttctttgtg atcctcaccc tcagcaacag ctcccactgc tccccacctc 4980
cccctttgac cctcaggatg cggcggtatt atgcagatgc catcttcacc aacagctacc 5040
ggaaggtgct ggcccagctg tccgcccgca aggccctcca ggacatcatg agcaggtaga 5100
gatccagatc t                                                      5111
```

<210> 56
<211> 3327
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
      pGHRH1-29Yala1522SK construct

<400> 56
```
ggtaccgagc tcttacgcgt gctagcccgg gctcgagatc tgcgatctaa gtaagcttgc 60
caccatgcca ctctgggtgt cttctttgt gatcctcacc ctcagcaaca gctcccactg 120
ctccccacct cccccctttga ccctcaggat gcggcggtat tatgcagatg ccatcttcac 180
caacagctac cggaaggtgc tggcccagct gtccgcccgc aaggccctcc aggacatcat 240
gagcaggtag tctagagtcg gggcggccgg ccgcttcgag cagacatgat aagatacatt 300
gatgagtttg gacaaaccac aactagaatg cagtgaaaaa aatgctttat ttgtgaaatt 360
tgtgatgcta ttgctttatt tgtaaccatt ataagctgca ataaacaagt taacaacaac 420
aattgcattc attttatgtt tcaggttcag ggggaggtgt gggaggtttt ttaaagcaag 480
taaaacctct acaaatgtgg taaaatcgat aaggatccgt cgaccgatgc ccttgagagc 540
cttcaaccca gtcagctcct tccggtgggc gcggggcatg actatcgtcg ccgcacttat 600
gactgtcttc tttatcatgc aactcgtagg acaggtgccg gcagcgctct tccgcttcct 660
cgctcactga ctcgctgcgc tcggtcgttc ggctgcggcg agcggtatca gctcactcaa 720
aggcggtaat acggttatcc acagaatcag gggataacgc aggaaagaac atgtgagcaa 780
aaggccagca aaaggccagg aaccgtaaaa aggccgcgtt gctggcgttt ttccataggc 840
tccgcccccc tgacgagcat cacaaaaatc gacgctcaag tcagaggtgg cgaaacccga 900
caggactata aagataccag gcgtttcccc ctggaagctc cctcgtgcgc tctcctgttc 960
cgaccctgcc gcttaccgga tacctgtccg cctttctccc ttcgggaagc gtggcgcttt 1020
ctcaatgctc acgctgtagg tatctcagtt cggtgtaggt cgttcgctcc aagctgggct 1080
gtgtgcacga accccccgtt cagcccgacc gctgcgcctt atccggtaac tatcgtcttg 1140
agtccaaccc ggtaagacac gacttatcgc cactggcagc agccactggt aacaggatta 1200
gcagagcgag gtatgtaggc ggtgctacag agttcttgaa gtggtggcct aactacggct 1260
acactagaag gacagtattt ggtatctgcg ctctgctgaa gccagttacc ttcggaaaaa 1320
gagttggtag ctcttgatcc ggcaaacaaa ccaccgctgg tagcggtggt ttttttgttt 1380
gcaagcagca gattacgcgc agaaaaaaag gatctcaaga agatcctttg atctttttcta 1440
cggggtctga cgctcagtgg aacgaaaact cacgttaagg gattttggtc atgagattat 1500
caaaaaggat cttcacctag atcctttttaa attaaaaatg aagttttaaa tcaatctaaa 1560
gtatatatga gtaaacttgg tctgacagtt accaatgctt aatcagtgag gcacctatct 1620
cagcgatctg tctatttcgt tcatccatag ttgcctgact ccccgtcgtg tagataacta 1680
```

```
cgatacggga gggcttacca tctggcccca gtgctgcaat gataccgcga gacccacgct 1740
caccggctcc agatttatca gcaataaacc agccagccgg aagggccgag cgcagaagtg 1800
gtcctgcaac tttatccgcc tccatccagt ctattaattg ttgccgggaa gctagagtaa 1860
gtagttcgcc agttaatagt ttgcgcaacg ttgttgccat tgctacaggc atcgtggtgt 1920
cacgctcgtc gtttggtatg gcttcattca gctccggttc ccaacgatca aggcgagtta 1980
catgatcccc catgttgtgc aaaaaagcgg ttagctcctt cggtcctccg atcgttgtca 2040
gaagtaagtt ggccgcagtg ttatcactca tggttatggc agcactgcat aattctctta 2100
ctgtcatgcc atccgtaaga tgcttttctg tgactggtga gtactcaacc aagtcattct 2160
gagaatagtg tatgcggcga ccgagttgct cttgcccggc gtcaatacgg gataataccg 2220
cgccacatag cagaacttta aaagtgctca tcattggaaa acgttcttcg gggcgaaaac 2280
tctcaaggat cttaccgctg ttgagatcca gttcgatgta acccactcgt gcacccaact 2340
gatcttcagc atcttttact ttcaccagcg tttctgggtg agcaaaaaca ggaaggcaaa 2400
atgccgcaaa aaagggaata agggcgacac ggaaatgttg aatactcata ctcttccttt 2460
ttcaatatta ttgaagcatt tatcagggtt attgtctcat gagcggatac atatttgaat 2520
gtatttagaa aaataaacaa ataggggttc cgcgcacatt tccccgaaaa gtgccacctg 2580
acgcgccctg tagcggcgca ttaagcgcgg cgggtgtggt ggttacgcgc agcgtgaccg 2640
ctacacttgc cagcgcccta gcgcccgctc ctttcgcttt cttcccttcc tttctcgcca 2700
cgttcgccgg ctttccccgt caagctctaa atcggggggct cccctttaggg ttccgattta 2760
gtgctttacg gcacctcgac cccaaaaaac ttgattaggg tgatggttca cgtagtgggc 2820
catcgccctg atagacggtt tttcgccctt tgacgttgga gtccacgttc tttaatagtg 2880
gactcttgtt ccaaactgga acaacactca accctatctc ggtctattct tttgatttat 2940
aagggatttt gccgatttcg gcctattggt taaaaaatga gctgatttaa caaaaattta 3000
acgcgaattt taacaaaata ttaacgttta caatttccca ttcgccattc aggctgcgca 3060
actgttggga agggcgatcg gtgcgggcct cttcgctatt acgccagccc aagctaccat 3120
gataagtaag taatattaag gtacgggagg tacttggagc ggccgcaata aaatatcttt 3180
attttcatta catctgtgtg ttggtttttt gtgtgaatcg atagtactaa catacgctct 3240
ccatcaaaac aaaacgaaac aaaacaaact agcaaaatag gctgtcccca gtgcaagtgc 3300
aggtgccaga acatttctct atcgata                                       3327


<210> 57
<211> 3954
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
     pGHRH1-29Yala1522SK construct

<400> 57
ggtaccatcg ctggggagct gggggagggg tcgccttcct gccctaccca ggactccggg 60
tgcgaccgct cctctatctc tccagcccac caccactcca ccacttggac acgtctccct 120
cctccctgga gtcgctctag agggtttggg ggtctgagta aagaacccga agtagggata 180
cagtgtggcg gcaccttcca gaggccccgg gcgcagggta gaccggggcg gggcggcccg 240
cggacaggtg cagccccagg cgcaggcgca ctcgcgcctc ccggcgcagg cggtgaacct 300
cgccccaccc cagcccctcc ggggggcagc tgggccgggt cgggaggggc ccaccagccc 360
gggagacact ccatatacgg ccaggcccgc tttacctggg ctccggccag gccgctcctt 420
ctttggtcag cacaggggac ccgggcgggg gcccaggccg ctaacccgcc gggggagggg 480
```

```
gctccagtgc ccaacaccca aatatggctc gagaagggga gcgacattcc agtgaggcgg 540
ctcggggggga gaacccgcgg gctatataaa acctgagcgt ggggaccagc ggccaccgca 600
gcggacagcg ccgagagaag cctcgcttcc ctcccgcggc gaccagggcc ccagccggag 660
agcagcaggt gtagccacca agcttgccac catgccactc tgggtgttct tctttgtgat 720
cctcacccct agcaacagct cccactgctc cccacctccc cctttgaccc tcaggatgcg 780
gcggtattat gcagatgcca tcttcaccaa cagctaccgg aaggtgctgg cccagctgtc 840
cgcccgcaag gccctccagg acatcatgag caggtagtct agagtcgggg cggccggccg 900
cttcgagcag acatgataag atacattgat gagtttggac aaaccacaac tagaatgcag 960
tgaaaaaaat gctttatttg tgaaatttgt gatgctattg ctttatttgt aaccattata 1020
agctgcaata aacaagttaa caacaacaat tgcattcatt ttatgtttca ggttcagggg 1080
gaggtgtggg aggttttttta aagcaagtaa aacctctaca aatgtggtaa aatcgataag 1140
gatccgtcga ccgatgccct tgagagcctt caacccagtc agctccttcc ggtgggcgcg 1200
gggcatgact atcgtcgccg cacttatgac tgtcttcttt atcatgcaac tcgtaggaca 1260
ggtgccggca gcgctcttcc gcttcctcgc tcactgactc gctgcgctcg tcgttcggc 1320
tgcggcgagc ggtatcagct cactcaaagg cggtaatacg gttatccaca gaatcagggg 1380
ataacgcagg aaagaacatg tgagcaaaag gccagcaaaa ggccaggaac cgtaaaaagg 1440
ccgcgttgct ggcgtttttc cataggctcc gcccccctga cgagcatcac aaaaatcgac 1500
gctcaagtca gaggtggcga aacccgacag gactataaag ataccaggcg tttccccctg 1560
gaagctccct cgtgcgctct cctgttccga ccctgccgct taccggatac ctgtccgcct 1620
ttctcccttc gggaagcgtg gcgctttctc aatgctcacg ctgtaggtat ctcagttcgg 1680
tgtaggtcgt tcgctccaag ctgggctgtg tgcacgaacc ccccgttcag cccgaccgct 1740
gcgccttatc cggtaactat cgtcttgagt ccaacccggt aagacacgac ttatcgccac 1800
tggcagcagc cactggtaac aggattagca gagcgaggta tgtaggcggt gctacagagt 1860
tcttgaagtg gtggcctaac tacggctaca ctagaaggac agtatttggt atctgcgctc 1920
tgctgaagcc agttaccttc ggaaaaagag ttggtagctc ttgatccggc aaacaaacca 1980
ccgctggtag cggtggtttt tttgtttgca agcagcagat tacgcgcaga aaaaaaggat 2040
ctcaagaaga tcctttgatc ttttctacgg ggtctgacgc tcagtggaac gaaaactcac 2100
gttaagggat tttggtcatg agattatcaa aaaggatctt cacctagatc cttttaaatt 2160
aaaaatgaag ttttaaatca atctaaagta tatatgagta aacttggtct gacagttacc 2220
aatgcttaat cagtgaggca cctatctcag cgatctgtct atttcgttca tccatagttg 2280
cctgactccc cgtcgtgtag ataactacga tacgggaggg cttaccatct ggccccagtg 2340
ctgcaatgat accgcgagac ccacgctcac cggctccaga tttatcagca ataaaccagc 2400
cagccggaag ggccgagcgc agaagtggtc ctgcaacttt atccgcctcc atccagtcta 2460
ttaattgttg ccgggaagct agagtaagta gttcgccagt taatagtttg cgcaacgttg 2520
ttgccattgc tacaggcatc gtggtgtcac gctcgtcgtt tggtatggct tcattcagct 2580
ccggttccca acgatcaagg cgagttacat gatcccccat gttgtgcaaa aaagcggtta 2640
gctccttcgg tcctccgatc gttgtcagaa gtaagttggc cgcagtgtta tcactcatgg 2700
ttatggcagc actgcataat tctcttactg tcatgccatc cgtaagatgc ttttctgtga 2760
ctggtgagta ctcaaccaag tcattctgag aatagtgtat gcggcgaccg agttgctctt 2820
gcccggcgtc aatacgggat aataccgcgc cacatagcag aactttaaaa gtgctcatca 2880
ttggaaaacg ttcttcgggg cgaaaactct caaggatctt accgctgttg agatccagtt 2940
cgatgtaacc cactcgtgca cccaactgat cttcagcatc ttttactttc accagcgttt 3000
ctgggtgagc aaaaacagga aggcaaaatg ccgcaaaaaa gggaataagg gcgacacgga 3060
aatgttgaat actcatactc ttccttttttc aatattattg aagcatttat caggggttatt 3120
gtctcatgag cggatacata tttgaatgta tttagaaaaa taaacaaata ggggttccgc 3180
gcacatttcc ccgaaaagtg ccacctgacg cgccctgtag cggcgcatta agcgcggcgg 3240
gtgtggtggt tacgcgcagc gtgaccgcta cacttgccag cgccctagcg cccgctcctt 3300
tcgctttctt cccttccttt ctcgccacgt tcgccggctt tccccgtcaa gctctaaatc 3360
```

33

```
ggggctccc  tttagggttc  cgatttagtg  ctttacggca  cctcgacccc  aaaaaacttg  3420
attagggtga  tggttcacgt  agtgggccat  cgccctgata  gacggttttt  cgccctttga  3480
cgttggagtc  cacgttcttt  aatagtggac  tcttgttcca  aactggaaca  acactcaacc  3540
ctatctcggt  ctattctttt  gatttataag  ggattttgcc  gatttcggcc  tattggttaa  3600
aaaatgagct  gatttaacaa  aaatttaacg  cgaattttaa  caaaatatta  acgtttacaa  3660
tttcccattc  gccattcagg  ctgcgcaact  gttgggaagg  gcgatcggtg  cgggcctctt  3720
cgctattacg  ccagcccaag  ctaccatgat  aagtaagtaa  tattaaggta  cgggaggtac  3780
ttggagcggc  cgcaataaaa  tatctttatt  ttcattacat  ctgtgtgttg  gttttttgtg  3840
tgaatcgata  gtactaacat  acgctctcca  tcaaaacaaa  acgaaacaaa  acaaactagc  3900
aaaataggct  gtccccagtg  caagtgcagg  tgccagaaca  tttctctatc  gata        3954


<210> 58
<211> 5283
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
      pGHRH1-29Yala1522SK2014 construct

<400> 58
ggtaccgcta  taggagagaa  aagagctgca  ctgagcaccc  tccttcccct  ttaaatgtca  60
acagattagg  agtcagtgaa  tgacagcaca  cctcttgcta  ccttagagac  caaaatttaa  120
gctactcccc  ttaagctata  gctagagtgc  acctgccagt  gtctttagtc  cccactgatg  180
gaacaggacc  caaggtattg  aagatggaac  atagttattc  attcatcctc  taatttaaaa  240
agctggatat  gctgtacagc  agaaattgac  ggaacaatgt  aaatcaacta  taacagaaga  300
aataaaaacc  tggggggaaa  gaagctgact  atgaaacccc  aggagctttc  tacatgggcc  360
tggactcacc  aaactcttta  ttttgtaatg  gacttctgac  attttttagga  agggctgtcc  420
tgatgtgggc  tatagaagag  ggtttcacat  gcttcttcaa  gaggacccac  actgtcccag  480
ttgctgagtc  ccaccaccag  atgctagtgg  cagctatttg  gggaacactt  aggcactaca  540
aaaaaatgag  tgattccatt  ctggctcaca  ccatatccct  gatgtacccc  ttaaagcatg  600
tcactgagtt  catcacagaa  aattgtttcc  cctgtgcctt  ccacaacaag  gttagagctg  660
tccttggggc  caggggaagg  gggcagggag  tgagaagcac  caactggata  acctcctctg  720
accccccactc  caccttacca  taagtagatc  caaatccttc  tagaaaatta  ggaaggcata  780
tccccatata  tcagcgatat  aaatagaact  gcttcagcgc  tctggtagac  ggtgactctc  840
caaggtggac  tgggaggcag  cctggccttg  gctgggcatc  gtcctctaaa  tagaaagatg  900
aacttgttca  gcctttccag  aaggaaaact  gctgcccagc  ctacagtgca  acgtccttgt  960
cttccatctg  gaggaagcac  gggtgacata  tcatctagta  agggcacctc  tctgtttcca  1020
cctccaggtc  gaggggtgtg  acccttactt  ctcagcctca  agggagggac  actcaacccc  1080
ccaaaaagac  atgagggcgc  tcagctcggc  ccaccgcacc  ccggaccgga  gccgtcaccc  1140
cccgaaattc  actcccttca  caagccccca  agcgcgttct  ctggtgcgga  ctgctccggg  1200
gccctggctt  tgtgcccagc  gttgtcagag  ccaccgccct  gagcctgtcc  ccgggagccc  1260
cgcgcctcct  cccaccgctc  cgctctcgcg  ccccgcggcc  agttgtctgc  cccgagacag  1320
ctgcgcgccc  tcccgctgcc  ggtggccctc  tccggtgggg  gtggggaccg  acagggtcag  1380
ccctccggat  ccggggcgct  ccgggtagcg  gggagaagtg  atcgctgggg  agctggggga  1440
ggggtcgcct  tcctgcccta  cccaggactc  cgggtgcgac  cgctcctcta  tctctccagc  1500
ccaccaccac  tccaccactt  ggacacgtct  ccctcctccc  tggagtcgct  ctagagggtt  1560
```

34

```
tggggggtctg agtaaagaac ccgaagtagg gatacagtgt ggcggcacct tccagaggcc 1620
ccgggcgcag ggtagaccgg ggcggggcgg cccgcggaca ggtgcagccc caggcgcagg 1680
cgcactcgcg cctccccggcg caggcggtga acctcgcccc accccagccc ctccgggggg 1740
cagctgggcc gggtcgggag gggcccacca gcccgggaga cactccatat acggccaggc 1800
ccgctttacc tgggctccgg ccaggccgct ccttctttgg tcagcacagg ggacccgggc 1860
gggggcccag gccgctaacc cgccggggga gggggctcca gtgcccaaca cccaaatatg 1920
gctcgagaag gggagcgaca ttccagtgag gcggctcggg gggagaaccc gcggctata 1980
taaaacctga gcgtggggac cagcggccaa gcttgccacc atgccactct gggtgttctt 2040
ctttgtgatc ctcaccctca gcaacagctc ccactgctcc ccacctcccc ctttgaccct 2100
caggatgcgg cggtattatg cagatgccat cttcaccaac agctaccgga aggtgctggc 2160
ccagctgtcc gcccgcaagg ccctccagga catcatgagc aggtagtcta gagtcggggc 2220
ggccggccgc ttcgagcaga catgataaga tacattgatg agtttggaca aaccacaact 2280
agaatgcagt gaaaaaaatg ctttatttgt gaaatttgtg atgctattgc tttatttgta 2340
accattataa gctgcaataa acaagttaac aacaacaatt gcattcattt tatgtttcag 2400
gttcaggggg aggtgtggga ggttttttaa agcaagtaaa acctctacaa atgtggtaaa 2460
atcgataagg atccgtcgac cgatgccctt gagagccttc aacccagtca gctccttccg 2520
gtgggcgcgg ggcatgacta tcgtcgccgc acttatgact gtcttcttta tcatgcaact 2580
cgtaggacag gtgccggcag cgctcttccg cttcctcgct cactgactcg ctgcgctcgg 2640
tcgttcggct gcggcgagcg gtatcagctc actcaaaggc ggtaatacgg ttatccacag 2700
aatcagggga taacgcagga aagaacatgt gagcaaaagg ccagcaaaag gccaggaacc 2760
gtaaaaaggc cgcgttgctg gcgtttttcc ataggctccg ccccccctgac gagcatcaca 2820
aaaatcgacg ctcaagtcag aggtggcgaa acccgacagg actataaaga taccaggcgt 2880
ttccccctgg aagctccctc gtgcgctctc ctgttccgac cctgccgctt accggatacc 2940
tgtccgcctt tctcccttcg ggaagcgtgg cgctttctca atgctcacgc tgtaggtatc 3000
tcagttcggt gtaggtcgtt cgctccaagc tgggctgtgt gcacgaaccc ccgttcagc 3060
ccgaccgctg cgccttatcc ggtaactatc gtcttgagtc caacccggta agacacgact 3120
tatcgccact ggcagcagcc actggtaaca ggattagcag agcgaggtat gtaggcggtg 3180
ctacagagtt cttgaagtgg tggcctaact acggctacac tagaaggaca gtatttggta 3240
tctgcgctct gctgaagcca gttaccttcg gaaaaagagt tggtagctct tgatccggca 3300
aacaaaccac cgctggtagc ggtggttttt ttgtttgcaa gcagcagatt acgcgcagaa 3360
aaaaaggatc tcaagaagat cctttgatct tttctacggg gtctgacgct cagtggaacg 3420
aaaactcacg ttaagggatt ttggtcatga gattatcaaa aaggatcttc acctagatcc 3480
ttttaaatta aaaatgaagt tttaaatcaa tctaaagtat atatgagtaa acttggtctg 3540
acagttacca atgcttaatc agtgaggcac ctatctcagc gatctgtcta tttcgttcat 3600
ccatagttgc ctgactcccc gtcgtgtaga taactacgat acgggagggc ttaccatctg 3660
gccccagtgc tgcaatgata ccgcgagacc cacgctcacc ggctccagat ttatcagcaa 3720
taaaccagcc agccggaagg gccgagcgca gaagtggtcc tgcaacttta tccgcctcca 3780
tccagtctat taattgttgc cgggaagcta gagtaagtag ttcgccagtt aatagtttgc 3840
gcaacgttgt tgccattgct acaggcatcg tggtgtcacg ctcgtcgttt ggtatggctt 3900
cattcagctc cggttcccaa cgatcaaggc gagttacatg atccccatg ttgtgcaaaa 3960
aagcggttag ctccttcggt cctccgatcg ttgtcagaag taagttggcc gcagtgttat 4020
cactcatggt tatggcagca ctgcataatt ctcttactgt catgccatcc gtaagatgct 4080
tttctgtgac tggtgagtac tcaaccaagt cattctgaga atagtgtatg cggcgaccga 4140
gttgctcttg cccggcgtca atacgggata ataccgcgcc acatagcaga actttaaaag 4200
tgctcatcat tggaaaacgt tcttcggggc gaaaactctc aaggatctta ccgctgttga 4260
gatccagttc gatgtaaccc actcgtgcac ccaactgatc ttcagcatct tttactttca 4320
ccagcgtttc tgggtgagca aaaacaggaa ggcaaaatgc cgcaaaaaag gaataaggg 4380
cgacacggaa atgttgaata ctcatactct tcctttttca atattattga agcatttatc 4440
```

```
agggttattg tctcatgagc ggatacatat ttgaatgtat ttagaaaaat aaacaaatag 4500
gggttccgcg cacatttccc cgaaaagtgc cacctgacgc gccctgtagc ggcgcattaa 4560
gcgcggcggg tgtggtggtt acgcgcagcg tgaccgctac acttgccagc gccctagcgc 4620
ccgctccttt cgctttcttc ccttcctttc tcgccacgtt cgccggcttt ccccgtcaag 4680
ctctaaatcg ggggctccct ttagggttcc gatttagtgc tttacggcac ctcgacccca 4740
aaaaacttga ttagggtgat ggttcacgta gtgggccatc gccctgatag acggttttc 4800
gccctttgac gttggagtcc acgttcttta atagtggact cttgttccaa actggaacaa 4860
cactcaaccc tatctcggtc tattctttg atttataagg gattttgccg atttcggcct 4920
attggttaaa aaatgagctg atttaacaaa aatttaacgc gaattttaac aaaatattaa 4980
cgtttacaat ttcccattcg ccattcaggc tgcgcaactg ttgggaaggg cgatcggtgc 5040
gggcctcttc gctattacgc cagcccaagc taccatgata agtaagtaat attaaggtac 5100
gggaggtact tggagcggcc gcaataaaat atctttattt tcattacatc tgtgtgttgg 5160
tttttgtgt gaatcgatag tactaacata cgctctccat caaaacaaa cgaaacaaaa 5220
caaactagca aaataggctg tccccagtgc aagtgcaggt gccagaacat ttctctatcg 5280
ata                                                                5283
```

<210> 59
<211> 5188
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
     pGHRH1-44YWTCMV construct

<400> 59
```
gctgtgcctt ctagttgcca gccatctgtt gtttgcccct ccccgtgcc ttccttgacc 60
ctggaaggtg ccactcccac tgtcctttcc taataaaatg aggaaattgc atcgcattgt 120
ctgagtaggt gtcattctat tctggggggt ggggtggggc aggacagcaa ggggggaggat 180
tgggaagaca atagcaggca tgctggggat gcggtgggct ctatgggtac ccaggtgctg 240
aagaattgac ccggttcctc ctgggccaga aagaagcagg cacatcccct tctctgtgac 300
acccctgtc cacgcccctg gttcttagtt ccagccccac tcataggaca ctcatagctc 360
aggagggctc cgccttcaat cccacccgct aaagtacttg gagcggtctc tccctccctc 420
atcagcccac caaaccaaac ctagcctcca agagtgggaa gaaattaaag caagataggc 480
tattaagtgc agagggagag aaaatgcctc caacatgtga ggaagtaatg agagaaatca 540
tagaatttct tccgcttcct cgctcactga ctcgctgcgc tcggtcgttc ggctgcggcg 600
agcggtatca gctcactcaa aggcggtaat acggttatcc acagaatcag gggataacgc 660
aggaaagaac atgtgagcaa aaggccagca aaaggccagg aaccgtaaaa aggccgcgtt 720
gctggcgttt ttccataggc tccgcccccc tgacgagcat cacaaaaatc gacgctcaag 780
tcagaggtgg cgaaacccga caggactata aagataccag gcgtttcccc ctggaagctc 840
cctcgtgcgc tctcctgttc cgaccctgcc gcttaccgga tacctgtccg cctttctccc 900
ttcgggaagc gtggcgcttt ctcatagctc acgctgtagg tatctcagtt cggtgtaggt 960
cgttcgctcc aagctgggct gtgtgcacga accccccgtt cagcccgacc gctgcgcctt 1020
atccggtaac tatcgtcttg agtccaaccc ggtaagacac gacttatcgc cactggcagc 1080
agccactggt aacaggatta gcagagcgag gtatgtaggc ggtgctacag agttcttgaa 1140
gtggtggcct aactacggct acactagaag aacagtattt ggtatctgcg ctctgctgaa 1200
gccagttacc ttcggaaaaa gagttggtag ctcttgatcc ggcaaacaaa ccaccgctgg 1260
```

36

```
tagcggtggt ttttttgttt gcaagcagca gattacgcgc agaaaaaaag gatctcaaga 1320
agatcctttg atcttttcta cggggtctga cgctcagtgg aacgaaaact cacgttaagg 1380
gattttggtc atgagattat caaaaaggat cttcacctag atccttttaa attaaaaatg 1440
aagttttaaa tcaatctaaa gtatatatga gtaaacttgg tctgacagtt accaatgctt 1500
aatcagtgag gcacctatct cagcgatctg tctatttcgt tcatccatag ttgcctgact 1560
cggggggggg ggcgctgag gtctgcctcg tgaagaaggt gttgctgact cataccaggc 1620
ctgaatcgcc ccatcatcca gccagaaagt gagggagcca cggttgatga gagctttgtt 1680
gtaggtggac cagttggtga ttttgaactt ttgctttgcc acggaacggt ctgcgttgtc 1740
gggaagatgc gtgatctgat ccttcaactc agcaaaagtt cgatttattc aacaaagccg 1800
ccgtcccgtc aagtcagcgt aatgctctgc cagtgttaca accaattaac caattctgat 1860
tagaaaaact catcgagcat caaatgaaac tgcaatttat tcatatcagg attatcaata 1920
ccatattttt gaaaaagccg tttctgtaat gaaggagaaa actcaccgag gcagttccat 1980
aggatggcaa gatcctggta tcggtctgcg attccgactc gtccaacatc aatacaacct 2040
attaatttcc cctcgtcaaa aataaggtta tcaagtgaga aatcaccatg agtgacgact 2100
gaatccggtg agaatggcaa aagcttatgc atttctttcc agacttgttc aacaggccag 2160
ccattacgct cgtcatcaaa atcactcgca tcaaccaaac cgttattcat tcgtgattgc 2220
gcctgagcga cgaaatacg cgatcgctg ttaaaggac aattacaaac aggaatcgaa 2280
tgcaaccggc gcaggaacac tgccagcgca tcaacaatat tttcacctga atcaggatat 2340
tcttctaata cctggaatgc tgttttcccg gggatcgcag tggtgagtaa ccatgcatca 2400
tcaggagtac ggataaaatg cttgatggtc ggaagaggca taaattccgt cagccagttt 2460
agtctgacca tctcatctgt aacatcattg gcaacgctac ctttgccatg tttcagaaac 2520
aactctggcg catcgggctt cccatacaat cgatagattg tcgcacctga ttgcccgaca 2580
ttatcgcgag cccatttata cccatataaa tcagcatcca tgttggaatt taatcgcggc 2640
ctcgagcaag acgtttcccg ttgaatatgg ctcataacac cccttgtatt actgtttatg 2700
taagcagaca gtttattgt tcatgatgat atattttat cttgtgcaat gtaacatcag 2760
agattttgag acacaacgtg gctttccccc cccccccatt attgaagcat ttatcagggt 2820
tattgtctca tgagcggata catatttgaa tgtatttaga aaaataaaca aataggggtt 2880
ccgcgcacat ttccccgaaa agtgccacct gacgtctaag aaaccattat tatcatgaca 2940
ttaacctata aaaataggcg tatcacgagg cccttttcgtc ctcgcgcgtt tcggtgatga 3000
cggtgaaaac ctctgacaca tgcagctccc ggagacggtc acagcttgtc tgtaagcgga 3060
tgccgggagc agacaagccc gtcagggcgc gtcagcgggt gttggcgggt gtcggggctg 3120
gcttaactat gcggcatcag agcagattgt actgagagtg caccatatgc ggtgtgaaat 3180
accgcacaga tgcgtaagga gaaaataccg catcagattg gctattggcc attgcatacg 3240
ttgtatccat atcataatat gtacatttat attggctcat gtccaacatt accgccatgt 3300
tgacattgat tattgactag ttattaatag taatcaatta cggggtcatt agttcatagc 3360
ccatatatgg agttccgcgt tacataactt acggtaaatg gcccgcctgg ctgaccgccc 3420
aacgaccccc gcccattgac gtcaataatg acgtatgttc ccatagtaac gccaataggg 3480
actttccatt gacgtcaatg ggtggagtat ttacggtaaa ctgcccactt ggcagtacat 3540
caagtgtatc atatgccaag tacgccccct attgacgtca atgacggtaa atggcccgcc 3600
tggcattatg cccagtacat gaccttatgg gactttccta cttggcagta catctacgta 3660
ttagtcatcg ctattaccat ggtgatgcgg ttttggcagt acatcaatgg gcgtggatag 3720
cggtttgact cacggggatt tccaagtctc caccccattg acgtcaatgg gagtttgttt 3780
tggcaccaaa atcaacggga ctttccaaaa tgtcgtaaca actccgcccc attgacgcaa 3840
atgggcggta ggcgtgtacg gtgggaggtc tatataagca gagctcgttt agtgaaccgt 3900
cagatcgcct ggagacgcca tccacgctgt tttgacctcc atagaagaca ccgggaccga 3960
tccagcctcc gcggccggga acggtgcatt ggaacgcgga ttccccgtgc caagagtgac 4020
gtaagtaccg cctatagact ctataggcac accccttgg ctcttatgca tgctatactg 4080
ttttttggctt ggggcctata cacccccgct tccttatgct ataggtgatg gtatagctta 4140
```

```
gcctataggt gtgggttatt gaccattatt gaccactccc ctattggtga cgatactttc 4200
cattactaat ccataacatg gctctttgcc acaactatct ctattggcta tatgccaata 4260
ctctgtcctt cagagactga cacggactct gtatttttac aggatggggt cccatttatt 4320
atttacaaat tcacatatac aacaacgccg tccccgtgc ccgcagtttt tattaaacat 4380
agcgtgggat ctccacgcga atctcgggta cgtgttccgg acatgggctc ttctccggta 4440
gcggcggagc ttccacatcc gagccctggt cccatgcctc cagcggctca tggtcgctcg 4500
gcagctcctt gctcctaaca gtggaggcca gacttaggca cagcacaatg cccaccacca 4560
ccagtgtgcc gcacaaggcc gtggcggtag ggtatgtgtc tgaaaatgag cgtggagatt 4620
gggctcgcac ggctgacgca gatggaagac ttaaggcagc ggcagaagaa gatgcaggca 4680
gctgagttgt tgtattctga taagagtcag aggtaactcc cgttgcggtg ctgttaacgg 4740
tggagggcag tgtagtctga gcagtactcg ttgctgccgc gcgcgccacc agacataata 4800
gctgacagac taacagactg ttcctttcca tgggtctttt ctgcagtcac cgtcgtcgac 4860
acgtgtgatc agatatcgcg gccgctctag accaggcgcc tggatccgcc accatgccac 4920
tctgggtgtt cttctttgtg atcctcaccc tcagcaacag ctcccactgc tccccacctc 4980
cccctttgac cctcaggatg cggcggtatt atgcagatgc catcttcacc aacagctacc 5040
ggaaggtgct gggccagctg tccgcccgca agctgctcca ggacatcatg agcaggcagc 5100
agggagagag aaaccaagag caaggagcaa gggtgcggct ttgaagatct tagtagtagt 5160
aggcggccgc tctagaggat ccagatct                                    5188


<210> 60
<211> 5254
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
      pGHRH1-44WTGHpep construct

<400> 60
gctgtgcctt ctagttgcca gccatctgtt gtttgcccct cccccgtgcc ttccttgacc 60
ctggaaggtg ccactcccac tgtcctttcc taataaaatg aggaaattgc atcgcattgt 120
ctgagtaggt gtcattctat tctggggggt ggggtggggc aggacagcaa gggggaggat 180
tgggaagaca atagcaggca tgctggggat gcggtgggct ctatgggtac ccaggtgctg 240
aagaattgac ccggttcctc ctgggccaga aagaagcagg cacatcccct tctctgtgac 300
acccctgtc cacgcccctg gttcttagtt ccagccccac tcataggaca ctcatagctc 360
aggagggctc cgccttcaat cccacccgct aaagtacttg gagcggtctc tccctccctc 420
atcagcccac caaaccaaac ctagcctcca agagtgggaa gaaattaaag caagataggc 480
tattaagtgc agagggagag aaaatgcctc caacatgtga ggaagtaatg agagaaatca 540
tagaatttct tccgcttcct cgctcactga ctcgctgcgc tcggtcgttc ggctgcggcg 600
agcggtatca gctcactcaa aggcggtaat acggttatcc acagaatcag gggataacgc 660
aggaaagaac atgtgagcaa aaggccagca aaaggccagg aaccgtaaaa aggccgcgtt 720
gctggcgttt ttccataggc tccgcccccc tgacgagcat cacaaaaatc gacgctcaag 780
tcagaggtgg cgaaacccga caggactata aagataccag gcgtttcccc ctggaagctc 840
cctcgtgcgc tctcctgttc cgaccctgcc gcttaccgga tacctgtccg cctttctccc 900
ttcgggaagc gtggcgcttt ctcatagctc acgctgtagg tatctcagtt cggtgtaggt 960
cgttcgctcc aagctgggct gtgtgcacga accccccgtt cagcccgacc gctgcgcctt 1020
atccggtaac tatcgtcttg agtccaaccc ggtaagacac gacttatcgc cactggcagc 1080
```

38

```
agccactggt aacaggatta gcagagcgag gtatgtaggc ggtgctacag agttcttgaa 1140
gtggtggcct aactacggct acactagaag aacagtattt ggtatctgcg ctctgctgaa 1200
gccagttacc ttcggaaaaa gagttggtag ctcttgatcc ggcaaacaaa ccaccgctgg 1260
tagcggtggt ttttttgttt gcaagcagca gattacgcgc agaaaaaaag gatctcaaga 1320
agatcctttg atctttttcta cggggtctga cgctcagtgg aacgaaaact cacgttaagg 1380
gattttggtc atgagattat caaaaaggat cttcacctag atccttttaa attaaaaatg 1440
aagttttaaa tcaatctaaa gtatatatga gtaaacttgg tctgacagtt accaatgctt 1500
aatcagtgag gcacctatct cagcgatctg tctatttcgt tcatccatag ttgcctgact 1560
cggggggggg gggcgctgag gtctgcctcg tgaagaaggt gttgctgact cataccaggc 1620
ctgaatcgcc ccatcatcca gccagaaagt gagggagcca cggttgatga gagctttgtt 1680
gtaggtggac cagttggtga ttttgaactt ttgctttgcc acggaacggt ctgcgttgtc 1740
gggaagatgc gtgatctgat ccttcaactc agcaaaagtt cgatttattc aacaaagccg 1800
ccgtcccgtc aagtcagcgt aatgctctgc cagtgttaca accaattaac caattctgat 1860
tagaaaaact catcgagcat caaatgaaac tgcaatttat tcatatcagg attatcaata 1920
ccatatttttt gaaaaagccg tttctgtaat gaaggagaaa actcaccgag gcagttccat 1980
aggatggcaa gatcctggta tcggtctgcg attccgactc gtccaacatc aatacaacct 2040
attaatttcc cctcgtcaaa aataaggtta tcaagtgaga atcaccatg agtgacgact 2100
gaatccggtg agaatggcaa aagcttatgc atttctttcc agacttgttc aacaggccag 2160
ccattacgct cgtcatcaaa atcactcgca tcaaccaaac cgttattcat tcgtgattgc 2220
gcctgagcga gacgaaatac gcgatcgctg ttaaaaggac aattacaaac aggaatcgaa 2280
tgcaaccggc gcaggaacac tgccagcgca tcaacaatat tttcacctga atcaggatat 2340
tcttctaata cctggaatgc tgttttcccg gggatcgcag tggtgagtaa ccatgcatca 2400
tcaggagtac ggataaaatg cttgatggtc ggaagaggca taaattccgt cagccagttt 2460
agtctgacca tctcatctgt aacatcattg gcaacgctac ctttgccatg tttcagaaac 2520
aactctggcg catcgggctt cccatacaat cgatagattg tcgcacctga ttgcccgaca 2580
ttatcgcgag cccatttata cccatataaa tcagcatcca tgttggaatt taatcgcggc 2640
ctcgagcaag acgtttcccg ttgaatatgg ctcataacac cccttgtatt actgtttatg 2700
taagcagaca gttttattgt tcatgatgat atattttat cttgtgcaat gtaacatcag 2760
agattttgag acacaacgtg gctttccccc ccccccatt attgaagcat ttatcaggt 2820
tattgtctca tgagcggata catatttgaa tgtatttaga aaaataaaca aatagggGtt 2880
ccgcgcacat ttccccgaaa agtgccacct gacgtctaag aaaccattat tatcatgaca 2940
ttaacctata aaaataggcg tatcacgagg cccttcgtc ctcgcgcgtt tcggtgatga 3000
cggtgaaaac ctctgacaca tgcagctccc ggagacggtc acagcttgtc tgtaagcgga 3060
tgccgggagc agacaagccc gtcagggcgc gtcagcgggt gttggcgggt gtcggggctg 3120
gcttaactat gcggcatcag agcagattgt actgagagtg caccatatgc ggtgtgaaat 3180
accgcacaga tgcgtaagga gaaaataccg catcagattg gctattggcc attgcatacg 3240
ttgtatccat atcataatat gtacatttat attggctcat gtccaacatt accgccatgt 3300
tgacattgat tattgactag ttattaatag taatcaatta cggggtcatt agttcatagc 3360
ccatatatgg agttccgcgt tacataactt acggtaaatg cccgcctgg ctgaccgccc 3420
aacgaccccc gcccattgac gtcaataatg acgtatgttc ccatagtaac gccaatagg 3480
actttccatt gacgtcaatg ggtggagtat ttacggtaaa ctgcccactt ggcagtacat 3540
caagtgtatc atatgccaag tacgcccct attgacgtca atgacggtaa atggcccgcc 3600
tggcattatg cccagtacat gaccttatgg gactttccta cttggcagta catctacgta 3660
ttagtcatcg ctattaccat ggtgatgcgg ttttggcagt acatcaatgg gcgtggatag 3720
cggtttgact cacggggatt tccaagtctc caccccattg acgtcaatgg gagtttgttt 3780
tggcaccaaa atcaacggga ctttccaaaa tgtcgtaaca actccgcccc attgacgcaa 3840
atgggcggta ggcgtgtacg gtgggaggtc tatataagca gagctcgttt agtgaaccgt 3900
cagatcgcct ggagacgcca tccacgctgt tttgacctcc atagaagaca ccgggaccga 3960
```

39

```
tccagcctcc gcggccggga acggtgcatt ggaacgcgga ttccccgtgc caagagtgac 4020
gtaagtaccg cctatagact ctataggcac accccctttgg ctcttatgca tgctatactg 4080
tttttggctt ggggcctata caccccgct tccttatgct ataggtgatg gtatagctta 4140
gcctataggt gtgggttatt gaccattatt gaccactccc ctattggtga cgatactttc 4200
cattactaat ccataacatg gctctttgcc acaactatct ctattggcta tatgccaata 4260
ctctgtcctt cagagactga cacggactct gtatttttac aggatggggt cccatttatt 4320
atttacaaat tcacatatac aacaacgccg tcccccgtgc ccgcagtttt tattaaacat 4380
agcgtgggat ctccacgcga atctcgggta cgtgttccgg acatgggctc ttctccggta 4440
gcggcggagc ttccacatcc gagccctggt cccatgcctc cagcggctca tggtcgctcg 4500
gcagctcctt gctcctaaca gtggaggcca gacttaggca cagcacaatg cccaccacca 4560
ccagtgtgcc gcacaaggcc gtggcggtag ggtatgtgtc tgaaaatgag cgtggagatt 4620
gggctcgcac ggctgacgca gatggaagac ttaaggcagc ggcagaagaa gatgcaggca 4680
gctgagttgt tgtattctga taagagtcag aggtaactcc cgttgcggtg ctgttaacgg 4740
tggagggcag tgtagtctga gcagtactcg ttgctgccgc gcgcgccacc agacataata 4800
gctgacagac taacagactg ttcctttcca tgggtcttтt ctgcagtcac cgtcgtcgac 4860
acgtgtgatc agatatcgcg gccgctctag accaggcgcc tggatccgcc accatgccac 4920
tctgggtgtt cttctttgtg atcctcaccc tcagcaacag ctcccactgc tccccacctc 4980
cccctttgac cctcaggatg cggcggtatt atgcagatgc catcttcacc aacagctacc 5040
ggaaggtgct gggccagctg tccgcccgca agctgctcca ggacatcatg agcaggcagc 5100
agggagagag aaaccaagag caaggagcaa gggtgcggct tgggcggaaa gtagaaacgt 5160
ttctgcgtat tgtacagtgt cgtagcgtag aagggagctg tgggttttga agatcttagt 5220
agtagtaggc ggccgctcta gaggatccag atct                                 5254


<210> 61
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 61
agatctgcca ccatgccact ctgggtgttc ttctttgtg                              39



<210> 62
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:  Primer

<400> 62
ggatccaagc cgcacccttg ctccttgctc ttggtt                                36
```

<210> 63
<211> 492
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 63
ggttttttgt ggatccaagg ccgagacgta cctgcgggtc atgaagtgtc gccgcttcgt 60
ggaaagcagc tgtgccttca cctacaaaga gtttgagcgg gcgtacatcc ccgagggaca 120
gaggtactcc atccagaacg cgcaggccgc cttctgcttc tcggagacca tcccggcccc 180
cacgggcaag gacgaggccc agcagcgatc cgacgtggag ctgctccgct tctccctgct 240
gctcatccag tcgtggctcg ggcccgtgca gtttctcagc agggtcttca ccaacagcct 300
ggtgttcggc acctcagacc gagtctacga gaagctcaag gacctggagg aaggcatcca 360
agccctgatg cgggagctgg aagatggcag tccccgggcc gggcagatcc tgaagcagac 420
ctacgacaag tttgacacga acctgcgcag tgacgatgcg ctgcttaaga actacgggct 480
gctctcctgc tt   492

<210> 64
<211> 69
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 64
ggatccgaag gcacagctgc tttccacgaa gcggcgacac ttcatgaccc gcaggtacgt 60
ctcggcctt   69

<210> 65
<211> 102
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 65
agatcttcaa agccgcaccc ttgctccttg ctcttggttt ctctctccct gctgcctgct 60
catgatgtcc tggagcagct tgcgggcgga cagctggccc ag   102

<210> 66
<211> 21

41

```
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:   Primer

<400> 66
ccgcggcatc ctgagggtca a                                              21


<210> 67
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:   Primer

<400> 67
tatgcagatg ccatcttcaa c                                              21
```